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THE
AMERICAN ALPINE JOURNAL

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Antarctic Interlude

WILLIAM R. LATADY

ON 19 February 1948 the U. S. Navy icebreakers *Burton Island* and *Adisto* plowed through the three feet of ice that gripped the wooden tug *Port of Beaumont*. The tug had been locked in the ice for a year; and its crew, the 23 "natives" of Antarctica, were living on shore—not in igloos, but in prefabricated houses, for these were Americans of the Ronne Antarctic Research Expedition, and their sojourn in the desolate country had been a matter of choice and of planning. Now Navy men peered from their ships to see what manner of man would volunteer to spend a year in this white waste; and all of us on shore showed equal curiosity to see new faces and to learn what had been happening back in the States. We were a rough-looking lot. Many had not shaved for a year, and our clothes bore the marks of seal hunts and many days on the trail. We were a happy lot, however, for soon we should be going home.

First came two days of packing and talking. We had thousands of questions to ask the newcomers—about prices, housing, the New Look, new cars, all the things that go with civilization. The sailors had plenty of questions in return. What was it like to live through a winter when the sun did not rise? How cold did it get? Weren't we tired of looking at just snow and ice, and at each other? How did we like our British neighbors, in the camp next to ours? What had we done for a whole year?

Had we really been there a year? I had been so busy that the time had slipped by, and now we were about to leave . . .

SLEDGING IN NENY FJORD
"Climbing Range" in background: Neny Matterhorn (6000 ft.), unnamed peak, Thumb (2200 ft.)
Photo, W. R. Latady

On the "Climbing Range"

Three weeks before, I had been camped in Neny Fjord with Robert Nichols and Robert Dodson and nine dogs. I had joined them to help wind up a season of intensive study of the local geological formations. The rocks bordering the fjord are all igneous, including batholiths, lava flows and many cutting dikes. The formations are complicated, and the age undetermined at this stage.

Camped beside us in the fjord were three English climbers: Frank Eliot, who had climbed in Switzerland and the Himalaya, as well as in the British Isles; Richard Butson, who had climbed in England, Scotland and Switzerland; and Kevin Walton, a true North Wales climber, who had started on Snowdon at the age of eight. With such companions, in a region where the mountains tower 6000 feet directly above the bay ice, Bob Dodson and I were very anxious to have a few days of climbing before we left.

A small range about ten miles long, on the west side of the fjord, had caught my eye when we first sailed by it, ten months before. This group of mountains, which we affectionately called our "Climbing Range," offered four major climbs on rock and ice. Of these "The Spire" (Peak A) was the most spectacular—a fine rock climb—while the "Neny Matterhorn" (Peak D) was the most majestic single peak. Between them rose "The Thumb" (Peak B) and an unnamed mountain (Peak C).

We succeeded in climbing the Spire, but only on the second try. Weather is the great hazard in the Antarctic, as in all mountain ranges. Here storms materialize and strike faster, possibly, than in any other part of the world, for this continent is the breeder of storms. Anyhow, our reconnaissance of the Spire ended when we were only about 300 feet above the base on the solid rock—or rather on the not very solid rock. It started snowing, and we went back to camp.

On the next good day, about a week later, we made our second attempt, convinced that we could get up. To climb to the place where we had stopped before was easy; but above that the rock, which had been loose, was even looser. Since no one had ever been here to kick the loosest fragments away, we had to do our own "farming" as we went along. The rock became steeper, sloping toward the vertical as we reached the white band (a layer of lighter

volcanics) that bisects the peak. This white band turned out to be still looser than the rock below—which amazed us, because the rock is so steep. Here we relied on Kevin Walton's "Wales Touch," his art of travelling fast over delicate spots, to lead us to the sounder rock above. Frank Eliot again took over the lead and, drawing on his vast experience, ensured success. The Spire, we found, was aptly named: there was room on the top for only one man at a time.

The descent was very slow, especially over the white band. For safety, we rappelled here, using one piton and a karabiner. Retracing our steps, we found familiar roughnesses at our fingertips and "tested" rocks under our feet, and reached the tents just as the sky blackened for bad weather. I believe that this was the first major rock climb in the Antarctic.

Several days later we made an attempt on the Thumb, a great truncated peak that stands beside the Spire and dwarfs it. The first part of the ascent was a long snow walk which became more interesting as we neared the rock. The snow gave way to ice and the slope steepened considerably, so that the rock was merely a continuation of what would have been a dangerous avalanche area in a warmer climate. We had to cut steps for the last hundred feet and found the move from ice to rock somewhat troublesome. Once we were on the rock, the going was easy for a while, although again the rock was so very loose that I was happy to have two experienced climbers behind me as I led upward.

We encountered a variety of pitches—ridges, slabs and traverses—and came eventually to an almost vertical face from which several flakes protruded. As I climbed over this, the rock sounded hollow, and everything that I touched stirred the feeling of instability that makes a climber ask himself why he left the valley. Above this 25-foot, 85-degree slope, the rock seemed more substantial, but not enough to give us full confidence that it would hold our weight. Besides, the climbing was delicate enough to warrant sneakers. We had brought these along, for just such an occasion; but, after putting them on and climbing a few more feet, we decided to hold a council and discuss our situation. The outcome was that we went down, having concluded that, as a general rule in the Antarctic, if one has to put on sneakers to go up, it is time to go down. Facilities for patching up a man were limited at the base, and we could not leave the continent until the spring thaw.

We were only 300 feet from the top when we decided to descend. About half-way down we noticed another route that might "go": the rock looked sounder, and patches of snow indicated that the incline might be less steep. We were tempted to have another try, but fortunately we resisted. By the time we reached the snow, a cold wind was blowing at about 30 miles an hour, and snow came soon after. It was one of those days of battle between sun and wind, and the wind finally won.

The next clear day, almost a week later, was one of those rare days without a cloud in the sky. Bob Nichols, Bob Dodson and I were studying rocks in the fjord, but our hearts were really in the mountains. That evening, under a sky clear as only a polar sky can be, we quickly worked out plans for an attempt on the Neny Matterhorn. We left camp at 11.00 P.M. and skied about five miles to the crest of an arête that separates a small glacier from a larger one which cascades off the mountain and forms a tremendous highway to the summit.

Having left our skis, we roped together to traverse this larger glacier and gain the ridge beyond—a safer, though longer, route to the top. Our crossing of the "highway" took us over many gaping crevasses, most of which had bridges strong enough to hold the weight of a man, and through many miles of loose snow. After we had attained the ridge, we ascended through more light powder until we were near the top. The slope was not very steep; we had to cut steps in only a few places. But here in the shadow of the mountain the air was very cold, even though the sun did not set that night.

Finally, at 5.00 A.M., we reached the summit. I had seen the fjord from this direction many times in the last few months, as I flew by on photographic missions; but never had it looked as it did when I stood on the rim and surveyed the country all around. Now I had a sense that I was a part of the country and belonged there; flying, I had felt divorced from the ground, and of course glad not to be too close to it. Attainment of this summit brought a feeling of accomplishment greater than I had known on any other climb. Perhaps it was due to the location of the mountain, to the complete isolation. Certainly the feeling was there.

Although we descended quickly, to warm our cold limbs, it was not until we reached the sunlight in the valley that we really

"CLIMBING RANGE" SEEN FROM THE AIR (10,000 FT.)
Dotted line shows route to summit of Neny Matterhorn
Photo, W. R. Latady

A
D
Bay Ice

thawed out. Then we were suddenly much too hot. In the Antarctic, as in other snowy regions, the sun will give a terrific burn if one fails to exercise great care. We followed our tracks back across the glacier and then skied to camp on a lovely surface—three inches of powder on a hard, solid base. The skiing down there, I would add, was often very good. It would delight the trail-skiers of New England to see the miles and miles of terrain with unlimited possibilities. Every hill is an open slope, for no trees grow in Antarctica.

During our stay of three weeks in Neny Fjord, we made several other ascents that were just as much fun as the ones recounted here. We moved from camp to camp around the periphery of the fjord by dog team—a mode of travel which is still a little unusual for mountaineers. Our dogs were hard and very faithful workers, and so eager for the trail that they would howl continuously on the days when we left them to go climbing. They really felt left out. Sled dogs, like hunting dogs, seem never so happy as when they are working. Ours would pull the load all day long and remain cheerful even when they were tired. In all kinds of weather, they lived out in the snow, withstanding the bitter cold of winter by staying still and letting the snow cover them like a blanket. The dogs are man's best friends on the Antarctic trail.

Penguin Island

Before joining Bob Dodson and Bob Nichols, I had spent a week visiting the Adélie penguins at one of their rookeries, on an island on the west side of the "Climbing Range." There were about 2000 penguins. Bernard Stonehouse, the British biologist, and I camped beside them to study their habits and photograph them. We banded 400 of the little fellows, to see whether they return to the same rookery every year. I am not going back to see, but Stonehouse was to remain in the vicinity for another year.

I had been fascinated by these penguins the first time that I saw them swimming. At first I thought, from the way they travelled through the water, that they were porpoises; but penguins travel—if anything—faster. You see them swimming along, surfacing every 50 yards or so, at intervals of only a few seconds, and then suddenly flying straight into the air to land upright on an ice shelf, five or six feet above the water. This great speed in water is attained by

LEFT: CLIMBING TO THE RIM OF THE MILE-HIGH PLATEAU
Taken at 4000 feet, looking north along the west coast of Palmer Peninsula
Photo, Robert Dodson

RIGHT: RAPPELLING DOWN THE SPIRE
Photo, W. R. Latady

means of a double sculling motion of the flippers as they go up and down in the water. The feet and tail are kept behind, to finish the streamlining of the otherwise almost perfect shape.

Penguins are subject to a curiosity which would mean their extinction in a land where other animals could prey on them. They have no fear of man, save when a person moves toward them rapidly. If you walk up to them slowly, they will either attack you or move out of the way when you are about to step into them. Their attack is something that surprises you when you first meet it. They hold you with their beaks and swat you with their hard flippers—so rapidly that you are struck ten times before you realize what is going on. They can raise a large welt through two pairs of gloves.

One day I stood watching a small group of penguins who were, just as attentively, watching me. Thinking that I would try to fool them, I jumped down behind an ice barrier. Just below me was the water where they frequently dove. When I looked up, I saw a row of little heads looking down. I suppose they wondered whether I, too, took a daily swim.

"Last Major Coast Line . . ."

For me, the expedition's successful aerial photographic program meant flying 15,000 miles in seven trips and taking 14,000 photographs (9 x 9 in.) that covered an estimated 250,000 square miles of Antarctic terrain. Since the story of the seven flights is long, I shall tell here only of the one most important geographically—that which led to the discovery of the last major coast line in the world. This coast line, the connection between the Weddell Coast and Coats Land to the east, was the only remaining unexplored section along the great circumference of the Antarctic continent. Long months of preparation, by all members of the expedition, preceded the successful flight, which had A-1 priority.

Captain James Lassiter woke me at 6.00 A.M. on 8 December 1947 with the news that the sky was clear, with no wind, and that he was taking off in 15 minutes. "In 15 minutes!" I had had no breakfast, the cameras were not in the plane, and many little things needed to be checked. Well, I would check them. Jim would not leave without me. And I was determined to have some breakfast before flying 2500 miles.

At 7.00 A.M. we took off, with Lassiter as pilot and Commander Ronne as navigator. I was aboard with all my cameras, extra film—and breakfast inside me. James Robertson and I had installed a trimetrogon system of cameras in the plane on the way down to the Antarctic. This system, used in exploratory mapping, involves three cameras so placed that they cover a field from horizon to horizon perpendicular to the flight line. Tripped simultaneously, they make photographs which overlap 60% in the line of flight and, used with a stereoscope, permit the making of a map showing elevations.

Lassiter headed the twin-engined C-45 Beechcraft toward Cape Keeler, where we had a gasoline cache and a small meteorological station manned by Larry Fiske and E. A. Wood. At the same time, Commander Ike Schlossbach and Lieutenant Charles Adams flew the UC-64 Noorduyn over to Cape Keeler with a load of gasoline. At the cape, we met, topped off our tanks, said our farewells to the fellows at the station, and took off again for the south.[1] The Noorduyn had taken off 40 minutes earlier, because it was much slower. We caught up with it, as we had planned, near Mount Tricorn, the most important feature along the coast. Here, some 300 miles south of Cape Keeler, we saw a red smoke flare against all the whiteness. We flew down to look: there, sure enough, was the British-American Weddell Coast Trail Party, camped for the day. We landed and found the men well and happy after more than two months on the trail. Art Owen, the Boy Scout from Texas, had gained 20 pounds and considered the trip restful. They were travelling down the coast, getting ground control for my aerial photographs and ready to act as safety links between us and the main base, in case we should have trouble. We carried complete emergency equipment, but a dog team half-way to the base would have been a great help if we had somehow been compelled to walk home.[2]

With extra tanks, the Beechcraft held 406 gallons. Beside the

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[1] The fellows at the station, from their side of the 6000-ft. plateau, had given us the go-ahead on the weather. Often it was fair on one side and foul on the other. We had had to wait a month for this day.

[2] The emergency kit consisted of sleeping bags, skis, a tent, a stove, kerosene and a man-haul sled, as well as 30 days' food for each man at the rate of 6000 calories a day.

trail tents we topped off again, as we had done at Cape Keeler, this time using gasoline brought down by the Noorduyn, which had left the cape with all tanks full and three full drums in the fuselage. Since the Noorduyn was to remain with the Trail Party, we then took off alone into the barren wastes, heading southward along the coast and into we knew not what.

Many men, I suppose, have had the feeling that there is something beyond, which they can not see—that is what drives them on to find out. I did not think of such things; I merely wondered whether the cameras would work in that cold. The temperature was about zero on the ground. Jim flew quickly to 8000 feet, and I started the cameras; but soon we were in clouds so thick that we could hardly see the ground. There was nothing to do but turn around and go back. After a long flight of an hour and a half, we were with the others again, at the base of Mount Tricorn. That night we had seal steaks, fresh from a seal that had rashly put his nose up through a "lead" and fallen captive to the travellers from a foreign world. The meat was good, very much like bear meat, though we should find it strong if we ate it here at home.

For four days we were tied to the ground by the clouds overhead, but the Trail Party pushed farther south the day after we arrived. They could travel in spite of poor visibility, navigating by compass and sledge wheel—a bicycle wheel with a cyclometer attached, to measure the mileage. Southward they went, at a steady rate of about ten miles a day. We had to wait for good weather; but, having it, we could cover in four hours what they had taken most of two months to travel.

December 12th was the day that we had been waiting for—a clear, cold morning, with no wind. The engines of the Beechcraft started immediately, but then the plane refused to move. When Jim raced the engines, all that resulted was a great plume of snow, swirling from the rear of the plane and looking like a small tornado. The skis had frozen to the snow and ice, and there was no chance of moving the plane without digging them out. We shovelled and scraped for an hour before the plane would budge, and then Jim taxied it around to break the remaining ice from the skis. Precious gas was going to waste, but what else could we do?

Finally, at 9.00 A.M., we took off and climbed, very slowly, in order to save gasoline. Still at only 500 feet, we passed the

Trail Party about 50 miles south of Tricorn. They waved, Jim dipped the wing, and we were off again—nothing in front of us but thousands of miles of snow and ice, with a few mountains protruding above the vast fields. Following the edge of the shelf ice, we turned to the east. On another flight we had followed the line of mountains to the west and come to the end of the chain, where the great white plateau met the sky.

Soon we lost sight of the Weddell Coast and the mountains. We were following the shelf ice that terminated in the open water. Beyond it, less than a mile, was more ice, in the form of great tabular bergs and loose brash ice. As far as the eye could see, and indeed (I later found) as far as the camera could see, there was nothing but ice, snow and sky. The uninitiated might imagine that this scenery would be tiresome; it possesses fascination that must be experienced to be appreciated. It is rather like the fascination of the open sea, which some people find appealing and others can not stand.

We flew until we had used a little less than half of the gasoline; then reluctantly turned, making a large triangle at the end of the course, and flew back along the same route. At our turning point we still could not see land ahead, but clouds obscured the coast some 50 miles ahead. By Commander Ronne's sights and dead reckoning, we were very near the coast that was plotted on the chart: Coats Land, our objective.

Our return trip was uneventful. We did not stop at Mount Tricorn, but merely radioed the Noorduyn to take off and follow us up the coast. Northward we continued, all the way to Cape Collier, where we descended to refuel from a cache that had been put there a month before. We had a hard time finding it in the drifted snow, but at last made out three drums, one on top of two, with a pole above. Then we discovered that we had no pump. Since the plan had been to keep both planes together, it had seemed quite all right to have the gas pump in the Noorduyn. Fortunately, we had in the Beechcraft two five-gallon tins and a small hose, normally used to pipe air to the cameras to flatten the film. With these we were able to siphon 130 gallons from the drums into the tanks. Then we were ready to take off again.

We flew to Keeler and thence right on to the main base, where we landed on the bay ice in front of camp. It is very convenient

to be able to land in one's front yard and taxi to the door. The whole camp was out to greet us and learn what we had seen. It felt strange to come back from an historic flight and say that we had seen nothing—or, one should say rather, that we had just seen more of the same barren terrain that was around us on all sides. We told of the end of the mountain chain and of the level, slowly rising ice shelf that extends south from the Weddell Coast. It seemed possible that a bay cuts into the shelf at the farthest extremity. But there was no oasis, no new mountain range, not even a cape.

I had kept the cameras running during the whole trip, to make a complete record of everything that we flew over. Now we were all anxious to see the results: perhaps the fine camera lenses had picked up something that our eyes had missed. For the next few days, I busied myself with developer, hypo and 200-foot rolls of film. Unfortunately, the photographs showed only great expanses of snow and ice; but these they showed so clearly that we were sure nothing else was there.

Scientific Undertakings

Exploration of the last major coast line in the world, though it was the primary objective of the expedition, was not the only one. The carefully planned scientific program gave attention to geology, oceanology, seismology, meteorology and allied subjects. I have already mentioned Nichols' geological work along the coast south of the base. He also ran a bathythermograph and on the trip south had collected plankton. Andrew Thompson, during most of our year on the continent, operated a tidal gauge. Although there was ice to a thickness of three and a half feet around the "tidal shack," the water still rose and fell with its accustomed regularity, the average difference between tides being about three feet.

Andy's "shacks" were a prevailing joke of the expedition. He made them of old crates and loose boards. Indeed, if anyone lost a choice bit of lumber that he was saving for a special job, he could probably find it nailed to one of Andy's shacks. There was the tidal shack, and there was the magnetic shack, which housed the magnetic dip needle for measuring slight variations in the earth's magnetic forces. The first model blew away on the day it was

finished, before it could be tied down. Then there was the seismological shack, which represented the greatest achievement in crate-shack construction. It was large and lightproof, and the two automatic photo-recording seismographs could be operated 24 hours a day. As if this was not enough, Andy started another shack about a month before we left, an improved model to house the seismograph which he left to be operated by the British. The study of microseisms in correlation with high- and low-pressure areas had proved so interesting that he decided to carry it on indirectly for another year, through the cooperation of one of the British scientists. He had himself recorded earthquakes at the rate of about four a week, some as distant as St. Louis.

Harries-Clichy Peterson started meteorological observations on the day we left Texas—25 January 1947—and continued them until we returned to New York, 16 months later. With Larry Fiske's help, Pete came to be pretty good at predicting the weather on the continent—a hard job because of the lack of information. The high on his chart was 50°, and the low -40°. Pete's program included also measurements of solar radiation and atmospheric refraction, and he set up a cosmic-ray machine for counting bombardments. This machine was normally set up in the science building, but on two occasions Pete and Chuck Adams took it to 10,000 feet in the Noorduyn. Result: more bombardments.

Donald Og McLean, our doctor, had little professional work to do. Once we had shaken off whatever colds and infections we may have had on entering the Antarctic Circle, we had no more illness. Either all the germs died off, or we became immunized to each other's types. Such things as stomachaches were unheard of. Sigmund Gutenko planned and cooked all our meals, making sure that we had a balanced diet. Almost everyone gained weight.

Antarctic Misadventures

We did have a few accidents. McClary's hand was broken by a falling block; and, while it was still in a sling, he fell 60 feet from the snout of a glacier into the thin ice and water below. We threw him a rope, and there were a few anxious moments while he struggled to put it around himself, with half the camp directing operations from the cliff above. Finally, Mac was hoisted to safety

and carried into the warm bunkhouse. The only damage was slight exposure.

On another occasion, in July, what might have been tragedy turned out otherwise. Peterson fell some 100 feet into a crevasse and remained there for eleven hours before a rescue party could get him out. It happened when Pete and Bob Dodson were returning from the weather station on the 6000-foot plateau, 15 miles from camp. Just at dusk, Pete disappeared, falling so far into a crevasse that Bob could not make out what he said. All Bob could tell was that Pete was alive. Bob took bearings on the near-by peaks, marked the spot with trail flags, and then went for help. Since our base was nine miles away, Bob took almost three hours to reach it. As soon as Bob had eaten a bite, Harry Darlington, Ike Schlossbach and I started back to locate the spot. The two camps, ours and the British (they had been with us watching movies when Bob came in), then organized a large rescue party, with tents, food, blankets and a large searchlight operated by two storage batteries—all drawn by two dog teams.

It was cold that night: 30° below zero, and a 30-mile-an-hour wind. Four of us were near the scene of the accident by 1.30 A.M., and the rest of the rescue party an hour later; but it was not until 5.00 A.M. that we found the trail flags. Bob had been very thoughtful to put them there, for the hole, where a snow bridge had collapsed, was only large enough to admit a man's body. With the searchlight we could see a prone form, far down. We felt sure that Pete was done for—half frozen, at least. We lost no time, however, in rigging a block and tackle over the hole and lowering Richard Butson, the British doctor, who was small and had had mountaineering experience. To Butson's amazement, Pete was very much alive; but he was in terrific pain, wedged so tightly, 110 feet down, that he felt as if he would be crushed to death.

Pete really was wedged. When a rope was tied to him and six men pulled, he did not budge. At last an extra pull brought him out, flying six feet into the air. He was taken into a warm tent, where his frozen socks were cut off. The ice had trapped him and at the same time saved him, for it had been comparatively warm down there in the crevasse: only 32°, with no wind. His feet were not so cold as many of ours; in fact, it was Ike who suffered severe frostbite in this affair. After an inspection had revealed no major

damage, Pete was wrapped in blankets and lashed on a dog sled for the bumpy ride home. Back at the base, Pete thawed out in bed for a week—during which he had some pretty bad nightmares—and then was back to normal. For his part in the rescue, Dr. Butson was awarded the Albert Medal.*

Antarctic Routine

To chronicle misadventures and omit an account of the planning and preparations which of course consumed far more time—and without which operations in the Antarctic would be impossible—would be grievously misleading. Every man contributed, in his special field, performing tasks that were not all glamorous.

For example, there was the gasoline, which I saw first in the warehouse at Beaumont: a hundred 55-gallon drums, each weighing about 350 pounds. We rolled them down to the dock and up a gangplank to the dock; then stacked them along the rail and aft by the planes, and lashed them with steel cables, to keep them from shifting in a heavy sea. To walk from bow to stern, one had either to climb over 20 feet of drums or to crawl under the planes—an interesting trip, either way, when the ship was rolling 35 degrees. Once we were anchored at the base, all the drums had to be brought on shore, before the bay ice froze. They were dropped overboard, floated ashore, and pulled onto the solid ice, by much muscle-power. Then they were moved to the highest part of the island, where they would not be completely buried by drifting snow in the winter. We brought two or three drums to camp at a time, as the planes needed fuel, and strained every drop of the gasoline through chamois before we pumped it into the tanks.

A few of us went ashore at the base before the rest, to make things ready. The others, on the ship, brought up on deck the food and equipment that we needed first. Heavy equipment had to wait until the winter freeze, when the ice would bear up under many tons; but we could bring light objects ashore on an improvised raft, made by lashing two boats together.[8] Food was stored away

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* See also Robert Dodson's account of the incident, on pp. 361-2 below.—*Ed.*

[8] We did manage to balance the Stinson L-5 ashore on the raft during the first few weeks, and in this plane we could make local flights.

from camp, so that we should not lose it in case of fire—worst enemy of polar explorers. It was not only the gasoline that required thoughtful handling! Clothing, too, was moved many times. Almost all our gear, I should like to point out, was loaned by the Office of the Quartermaster General, for testing purposes;[4] and special flying clothes, which we found excellent, were loaned by the Army Air Forces.

The base itself had been established first in 1939, as the East Base of the U. S. Antarctic Service, and the little island was indeed a place well chosen. We had a good harbor, solid rock for our buildings, and easy access to the high polar plateau. We found no other place like it during the whole time that we spent in the Antarctic. On the first flight of the season, Harry Darlington and I flew 100 miles down the coast to the south, looking for a spot where the ship could put a party ashore to establish a cache; but we looked in vain.

Running the base, however, took much time. When we arrived, the old buildings were in good repair, except for the roofs, which leaked. The canvas which had formerly covered the buildings had blown off, and there were cracks where the prefabricated sections joined. In some places, there was a foot of ice on the floor. We tried many methods of removing it, and finally resigned ourselves to the backbreaking task of chopping it out.

Of modern conveniences we boasted few. We did have electricity, when the Diesels were working. Charles Hassage spent many hours nursing the machines, so that they would give us power during the whole year. Several new bearings had to be made out of scrap material that happened to be on the ship. For cooking and heating, we used coal entirely. It came in 100-pound bags, which we deposited in several caches and had to move many times. All our water was from glacier ice, chuted into a 1000-gallon tank behind the galley stove and melted both by radiation and by a coil that passed through the stove and the tank.

Trail equipment occupied a great deal of time. McClary and E. A. Wood steamed and reformed the sled thwarts, and lashed the sleds so that they would stand three months' use over rough coun-

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[4] Dodson's fine report on this gear has been published by the O.Q.M.G. in Washington.

try. Larry Fiske made harnesses for all the dogs that were to go on the long trip south. Bob Nichols and Walter Smith made more than 500 trail flags, of airplane fabric and bamboo poles. Bob Dodson and Don McLean made dog pemmican from Casco meal and seal oil, which they rendered from blubber. They wore the same clothes throughout this operation and for some weeks thereafter were given a wide berth by the rest of us. Seal oil smells strong! Sig Gutenko, when he was not cooking, spent hours making pemmican for the trail parties and the airmen.

For relaxation, we had a good library, a few games and—best of all—50 Hollywood movies, 16-mm. with sound. The popular features I can almost recite from beginning to end. Our only contact with the United States was by radio. Lawrence Kelsey, operator on the ship and at the base, sent out personal messages as well as news of the expedition. During all our flights, he "stood by," sometimes for as long as 36 hours, in case there should be a distress call.

On the voyage home from the Antarctic, as on the voyage southward, every member of the expedition turned sailor. Only eight of the 23 had ever been to sea before we left Texas, but we soon found out that a doctor or a geologist will make a satisfactory sailor. Not always a good helmsman, to be sure: once, when one of our "sailors" found that he was 180° off course, he just completed the circle and went on his way, a little more carefully. Rebuked for his lapse, which must have cost us a day, he replied, "What difference does it make? We're in the middle of the ocean."

On the way back, I must add, a deviation of five degrees was considered great. We made the voyage without mishap, and steamed past the Statue of Liberty on the morning of 15 April 1948, with a fireboat on either side of us. At Pier 20 I could make out my mother and two brothers, standing in the crowd. Had all this been a dream? They looked the same as when I had left them, 16 months before.

First Ascents in the Cashmere Crags

RALPH S. WIDRIG

GOOD granite is probably the best of rocks to climb on. The State of Washington is blessed with several granitic batholiths, of which one of the finest, from a rock climber's point of view, is to be found near Leavenworth, in the vicinity of Icicle Creek and its tributaries. In the center of this granitic region rises a menacing collection of isolated spires and towers called the Cashmere Crags. The granite range extends southward past Ingalls Creek and is finally climaxed by 9500-foot Mount Stuart.

The best approach to the climbing area is up the Icicle Creek road from Leavenworth, about two miles. From there, an excellent horse trail leads five miles up Snow Creek to Nada Lake. Then one follows up Nada Creek, which can be seen flowing down over a series of cliffs and rockslides to the west (no trail). It is best to keep just to the right of the creek. One emerges in a large basin, with the crags beginning to appear to the south. Proceed to the head of this shallow basin, and there you are—virtually surrounded by tall, threatening spires that streak skyward like Dantesque flames. One reflects that it might have been well to bring along more pitons, not to mention contraction bolts . . .

These were the thoughts which drifted through the minds of Fred Beckey, Pete Schoening, Art Holben and the writer as they beheld the sight early one morning in the spring of 1948. We realized that 99% of these awful things had not been climbed. And our intended objectives for the trip were not yet even in view! We had planned to start at the western limit of the spires and work east, climbing as many of them as would "go." We therefore traversed westward along the lower northern slopes until we reached a broad col, "Prussik Pass," the western limit of the crags. Our attention now focused on the first of a series of three very striking towers. It seemed to have only one route worthy of consideration. This would involve about 200 feet of nearly vertical climbing, but would end 30 feet below the summit horn.

It was decided that Beckey and Holben would worry about

Photo, R. Widrig

THE MOLE: ROUTE OF FIRST ASCENT

making this route, while Schoening and I would examine the next spire for a possible route. This next peak was simply a four-sided shaft, perched on an exposed, knife-like ridge. It was perhaps 60 feet tall and beautifully symmetrical, resembling a steep truncated pyramid. The symmetry was so striking that we decided to call this "The Monument." Again there appeared to be only one possible route of attack. This, we could plainly see, would involve 60 feet of direct-aid work.

On a platform which was to be the base of operations, we assembled our gear—pitons of every description, hammers, ¼-inch manila slings, contraction bolts (which were not used), karabiners, two nylon climbing ropes and, of course, tennis shoes. We based our hope of attaining the top on a vertical crack running from the platform to a very narrow ledge which extended around the peak about half-way up. There the crack ended, but a cannonhole behind a large slab balanced on this ledge gave us hope of traversing from that point to the opposite side of the spire. We would then try to pass a line over the remaining pitch.

I quickly stocked up with hardware and, with Pete belaying, drove the first piton. The crack was too wide for ordinary iron; angle pitons had to be used. Fortunately, we had a fair supply of them. I tied a sling into the ring of the piton and, using it for a foothold while at the same time taking tension from Schoening's belay, drove in the next piton as high as I could reach. Continuing in this fashion until four pitons had been used, I attained a position about ten feet below the ledge, on the smooth wall. I then retreated, and Pete went up to continue while I belayed. Two more direct-aid pitons enabled him to reach the ledge. I heard him say something about "airy atmosphere" and wondered how he managed to stick to the narrow offset. As I later found out, this ledge was about six inches wide!

As Pete began to traverse to the opposite side, I became mentally prepared to give a dynamic belay in case he should slip. His balance was good, however, and soon the "tension" was over when he anchored himself on a relatively spacious platform, probably at least a foot and a half wide!

I next assembled a light cod line, weighted at one end by several pitons. Piton weights had to be used, as no loose rock seems to exist in the area. After carefully coiling the line so that it would

PRUSSIK PEAK

End of dotted white line shows point from which summit horn was lassoed. Broken white line shows path of Prussik-knot ascent of final pitch. Note cairn to right of summit horn

Photo, R. Widrig

pay out (and also pay off), I gave the weight a mighty thrust. Luck was with us: it soared inches above the top and down the other side into Pete's lap.

I then tied the spare climbing rope to my end of the line, and Pete pulled it over the top. Then, with Pete belaying his end of it, I ascended the wall using slings and Prussik knot. Having gained the top, I anchored the rope while Pete climbed. Five hours after we started from the platform, we were both perched on the meager summit.

We could now see Beckey and Holben back on the first peak. As we learned later, they had also used a lot of direct-aid pitons to negotiate the lower 180 feet, and now they were debating the best method (if any) of scaling the final horn. After reaching a decision, Art made a lasso from a 100-foot length of ⅜-inch nylon rope. With this he vainly attempted, from a very precarious perch, to lasso the horn. On the fourth try he succeeded, and joyful shouts could be heard echoing off the near-by spires. Beckey then climbed up this rope with slings and Prussik knot, encountering extreme difficulty at the junction of the loop and the horn. But ultimately both climbers reached the top and built a large, tall cairn. They dubbed it "Prussik Peak," in recognition of their extensive use of the Prussik knot.

A short time later we held a rendezvous at the base of the third spire. The lateness of the hour put any attempt on it out of the question; but after looking it over we concluded that here again one, and only one, route was even thinkable. This peak looks very impressive from a distance. Its square appearance inspired the name "Boxtop." Unusually clear weather allowed us a good view of other near-by peaks. To the south, the large bristling massif of McClellan Peak stood clearly outlined. A party reached its highest point in 1946.[1] Eastward, just past the Boxtop, projected a formidable spire, the West Peak of Mount Temple, named and climbed by a party including Beckey on a previous trip.[2] To the north, perhaps three miles distant, loomed a very large, thick, thumb-like shaft. Beckey turned to me and said, "Oh look, there's The Mole." The

[1] Keith Rankin, "New Climbs in the Cascades," *Mountaineer,* XXXIX (Dec. 1946), 28.

[2] Gummie Johnson, "Now Conquered," *Mountaineer,* XXXIX (15 Dec. 1947), 51. See also *A.A.J.,* VII (April 1948), 102.

shaft was thereupon named, and we immediately made plans for its conquest on the next trip.

On Memorial Day week end, one week later, Beckey, Wes Grande and I made our way up Rat Creek hoping to make an attempt on this new peak. Rat Creek drains the northern slopes of the crags and flows into the Icicle River several miles above Snow Creek. We had decided on this approach because it seemed the most direct route to the base of the Mole.

By noon we were well up toward the head of the creek, and several new peaks were beginning to show themselves. The Mole loomed up like an immense monolith, its dome-like top appearing to be quite inaccessible. Considerable amounts of snow still covered the area; the effects of an exceptionally severe winter were still very apparent. The appalling, near-vertical flanks of the Mole, however, were virtually dry; and climbing conditions appeared to be at their best.

That afternoon, from our camp near its base, we studied a route which once again was the only one that seemed to exist. With the aid of a telescope, we concluded that the first 500 feet would be the toughest. If they could be negotiated, the remaining 300 feet, we decided, would surely prove easier.

At dawn the next morning, the sky was clear, and a brisk north wind assured us that it would remain so. After a quick breakfast we packed our rucksacks with rope, pitons, karabiners, etc., and started out in high spirits. We ascended a series of steep snow fields and then a couloir which brought us out at the junction of the Mole's rock flanks and its lower snow fields. Here we set about changing to tennis shoes while the barking of coyotes echoed weirdly from the basin below. Fred led the first three rope lengths, using a couple of pitons for safety. Then, after a brief debate as to the route, Grande climbed a high-angle 100-foot gully and belayed me to his stance on a small platform. Here the route was completely blocked by a large flake, split off about six inches from the main face.

The only apparent solution was to go right over the top of the flake by using two direct-aid pitons in a crack on the adjacent wall. This Grande did, and from the top was able to stem down the other side. Fred and I then came up quickly, and Wes proceeded along

an exposed ledge to a short, steep gully which was filled with ice. This he slowly ascended, belayed from below, by chopping steps with a piton hammer. He then anchored himself and belayed me up. Here the route was again blocked by an enormous flake, but a narrow tunnel seemed to lead in behind it. I gave Wes a shoulder stand, and he started to crawl through the cannonhole. When he was about half-way through, he yelled back that he could see daylight through another opening straight above and that he would try to stem out through it. This he did, and immediately reported that the way looked clear to the summit. We scrambled up the remaining 300 feet of exposed but well-broken face.

To our astonishment we found several large pools of clear, cold water on top of the final block—evidently solution holes in the granite. After quenching our thirst we got out lunches and prepared a gormandizer's potlatch to celebrate our good fortune. A large cairn was then constructed from loose boulders, and a register bottle left inside. As our eyes wandered across the rolling snow fields to the south, we could not help but be impressed by the appearance of the peaks at the east end of the crags. We decided to attempt them next and let the Boxtop go for a while. But our chance did not come until autumn.

On the first week end of September 1948, Beckey, Schoening and I were once again at the east end of the crags, preparing to tackle the three formidable spires which dominate that end. These can be plainly seen from Nada Lake. The rock was all dry by now, and we wore tennis shoes the entire day.

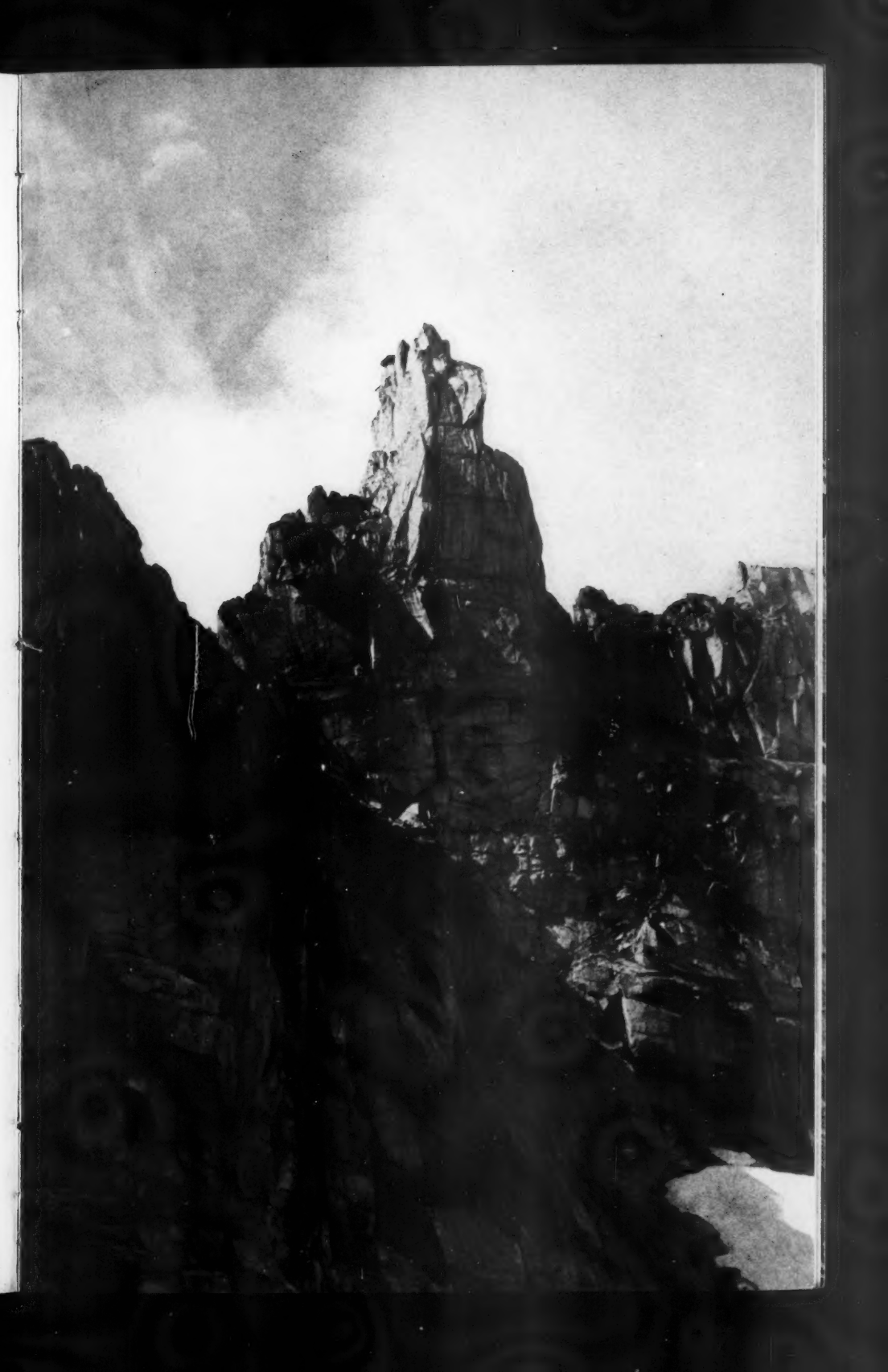
The first peak that we attempted was the highest of the three. It did not prove too difficult, and it was a very enjoyable climb. We called it "Razor Back Spire" and from its summit admired the highest peak in the area, Mount Temple, just across a col to the west.[3]

Our next objective was "The Professor," so named because of an odd slab projecting from the upper part, like the nose of a dignified professor. Seen from the Mole, this spire seems to thrust skyward in a twisting fashion. The climb proved considerably more difficult than the previous one. Reaching its base involved some

[3] Mt. Temple was first climbed in 1946. See Rankin, *op. cit.*, p. 29.

MOUNT TEMPLE
Route follows right skyline

Photo, P. Schoening



really delicate balance work and took an hour and a half. The route was climaxed by a 60-foot vertical pitch leading up the south skyline. Two pitons were employed as safeguards here, and after some strenuous muscle-work by the leader the summit was ours.

We felt we had time to try one more peak and, after constructing a six-foot cairn, hastily made our way over to the base of "The Lighthouse," third of the three east spires. It is a tall, isolated tower which stands like a beacon just to the north. A brief examination of its tapering, cylindrical surface made it obvious to us that here was a tough one. There seemed no visible way to get started on the thing, and the appearance of its upper regions was even more discouraging. For a moment I entertained the idea of trying again the tactics we had applied to the Monument. Further investigation showed that this was probably the only way, save that of nailing one's way straight up the face with a star drill and contraction bolts!

With careful belays we climbed to a small platform on the north face. From here a hidden flake of exfoliating granite existed up to within about 15 feet of the top. There it ended, and the remaining pitch was simply a smooth wall. The flake, however, terminated in a shallow depression from which we hoped to get a stance to pass a line over the top.

Pete retreated, made his way around to the lower south face, ascended as far as safety would permit, and anchored himself on a small shelf where he would receive the line. Fred and I then prepared to climb, by tension, to the upper limit of the granite flake on the north face. Here again we learned that angle pitons were all that could be driven in the wide crack between the flake and main wall.

With Fred belaying, I began the ascent of this pitch, using angle pitons and slings in the same fashion as had been necessary on the Monument. But about 20 feet up, the crack suddenly flared out to an irregular width too great for our widest angle pitons. For a moment it seemed that we were to be stopped just six feet below the depression from which we had expected to throw the line. Finally I stretched to my utmost reach and tried a piton at a point in the crack that seemed somewhat narrower. It stuck, temporarily at least. I then gave it a gentle tap with the hammer, to see if it would drive; and soon the air was filled with the melodious, high-

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LEFT: TENSION CLIMBING IN THE CRAGS
Photo, A. Holben

RIGHT: BECKEY STEMMING CHIMNEY ON ROCKET PEAK, CASHMERE CRAGS
Taken with the camera pointing straight up
Photo, J. Schwabland

pitched ringing of a piton being driven in sound rock. A hoarse yodel then informed Pete that the line would soon be coming over the top.

I quickly retreated, and Fred went up to the shallow depression to throw the weighted line. His accuracy was good, and after the second attempt Pete yelled back that he had the end of it and was tying on the spare climbing rope. Fred soon pulled the rope back over the top, and Pete ascended the final pitch using Prussik knot.

From the top the afterglow of a beautiful sunset suggested that darkness would soon be upon us. Two quick rappels and some scrambling brought us down to the rockslide, and from there we hastily made our way down toward Nada Creek. The trail at Nada Lake was reached at 2.00 A.M. A bivouac closed a rather exhausting day.

The climbing season was now waning, and a sizable group of rock climbers from Seattle made plans for an elaborate expedition to the crags to get in a last bit of climbing before winter. Six of us were planning to have an airplane drop supplies to our camp in a beautiful open meadow near the Lighthouse. Our equipment, this time, included an automobile tent, a 12-pound radio, and a profusion of canned goods and delicacies. We had planned to set up a camp that would seem a paradise to parties returning from a day in the crags. But such it was not to be . . .

A friend of one of the climbers was to drop the equipment from a Luscombe seaplane. The plan was for him to land on Lake Wenatchee, take on a load of bundles which we would have previously left on the beach, and fly them over to our camp, a distance of about ten minutes by air.

On the afternoon of September 19th we were eagerly waiting at our campsite for the sound of approaching aircraft. Soon we could see the plane coming, and we immediately set up the prearranged signals to mark our position. The first load got off excellently: all the bundles fell within 100 yards of camp. The second load was also very successful. But on the third and last trip things finally went wrong. As the first bundle left the plane, the second one fell down from the seat and jammed on the right-hand stick of the dual controls. The plane went into a spin and

crashed in a rockslide about 300 yards from camp. The pilot broke right through his 2000-pound test safety belt and was thrown out on the rocks. To our amazement he picked himself up and started over to meet us. Some cuts and a sprained back seemed the extent of his injuries, and we brought him clear out to the cars that evening.

The next day we spent salvaging what was worth while of the demolished airplane. The next after that proved to be the only one of climbing. The West Peak was climbed for the second time, and Beckey and Schoening were finally able to force their way to the top of the Boxtop, under very cold and adverse weather conditions. They reported this to be an excellent climb involving a surplus of exposure. Direct-aid technique was again resorted to.*

The following morning the party was greeted by stormy weather and eight inches of fresh snow. Winter had obviously arrived, and we made haste to cache the unused food that remained. The party then made its way down the familiar route to Nada Creek as swirling fog closed in around the ice-sheathed spires behind.

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* See the note on p. 342 below.—*Ed.*

The Northern Selkirks

ARNOLD WEXLER

NORTH of the Canadian Pacific Railroad, within the big bend of the Columbia River, are the rarely visited northern Selkirks. A casual glance from the highway that parallels the river, or from the railroad in the Beaver and Illecillewaet Valleys, can do no more than hint at the alpine country hidden behind the bulwarks of bush, cliff and torrent that guard the approaches to the interior. It is only from such a high point as Mount Rogers to the south or Mount Columbia to the east that a distant, tantalizing picture of this region is unfolded.

Such a picture excited the enthusiasm of Sterling B. Hendricks; and his interest, communicated to several climbing companions, resulted in 1946 in a successful expedition to the Sir Sandford and Adamant regions.[1] Not since 1912, when Palmer and Holway, after five years of effort, conquered Mount Sir Sandford (11,590 ft.),[2] had anyone returned for a second attempt. Now an easier approach to the mountains, along Swan Creek, was evolved. From the summit of Sir Sandford, a panorama of the Selkirk wilderness inspired the notion of an alpine crossing of the northern mountain groups.

In the spring of 1948 plans were made to bring the idea to fruition. It was proposed that a traverse be made from Flat Creek in the Illecillewaet Valley to the mouth of Swan Creek on the Columbia River, and that along this route a number of base camps be established, to serve as focal points for attempts on some of the major peaks. The decision was made to utilize airplane support. The personnel of the party numbered six: Sterling B. Hendricks, Donald Hubbard, Alexander C. Fabergé, Alvin E. Peterson, Chris G. Scoredos and Arnold Wexler. Andrew J. Kauffman, who had

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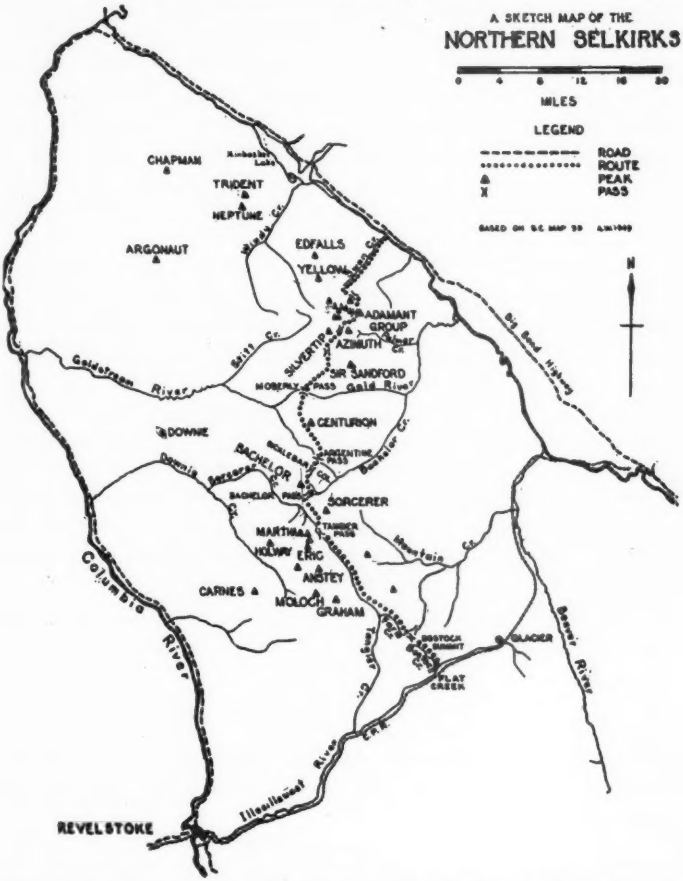
[1] S. B. Hendricks, "Sir Sandford and the Adamant Group," *C.A.J.*, XXX (1947), 72 ff.; Arnold Wexler, "Mount Sir Sandford and Its Neighbors," *Appalachia*, XXVI (Dec. 1946), 190 ff.

[2] Howard Palmer, *Mountaineering and Exploration in the Selkirks* (New York: G. P. Putnam's Sons, 1914), pp. 303-26.

persuaded Benjamin Ferris and William Putnam to join him in a trip into the Adamant Group, suggested that the two parties cooperate on the air drops. The result was an arrangement whereby one plane supplied both parties.

Early on the dull morning of July 5th, the train discharged



Hendricks, Peterson and Scoredos at Flat Creek, while Hubbard and I continued to Vernon, 125 miles to the west. Hubbard and I had been chosen for the air task because, presumably, we were the

most expendable. I had a few vague doubts about the logic behind this, and the long trip to Vernon did little to allay them.

Thursday the 8th had been selected as the day for making the drops. Sufficient time had been allowed for our advance party to reach Tangier Pass, and for the Kauffman party to be on Gothics Névé in the Adamants. It rained on Wednesday. On Thursday the two-engine Anson took off, but since storm clouds hid the upper half of Tangier Valley, no drops were possible. Friday dawned clear, and the mission was accomplished. My mental reservations as to low-level mountain flying, especially as to skipping 150 feet above the drop areas, persisted until I saw the pilot take his five-year-old youngster along for the ride. I then relaxed and enjoyed every moment of the flight. Pilots Peter Dyck and Dan McIvor did an excellent job.

We flew to Tangier Creek and followed its course to the head of the valley. A smoke signal pinpointed the target. It took 14 passes to drop 21 packages. From Tangier Pass we winged down Sorcerer Creek, turned northeast, crossed the Centurion Glaciers, and intersected Gold River. The summit of Mount Sir Sandford was hidden under a white banner. On reaching Palmer Creek we veered directly toward Gothics Névé. On the gentle swells of snow, three figures waved their arms. After one dry run, we rapidly pushed out parcel after parcel in seven successive passes. Kauffman, Ferris and Putnam immediately began collecting the supplies, prompted no little, I suspect, by an anticipation of special refreshments.

With the work over, the return trip was pure enjoyment. We flew across Granite Glacier toward Edfalls Mountain, sighted Kinbasket Lake, joined Austerity Creek and traced it to its source, followed Stitt Creek to Goldstream River, then went south to Carnes Mountain, met the Columbia River above Revelstoke, and headed back to Vernon. The southern wall of the Adamant Group, with its steep rock faces, was the most impressive sight we had during the flight.

At 5.30 A.M. on Saturday, Hubbard and I arrived at Flat Creek (3094 ft.) to join Fabergé for the trip to Tangier Pass. We tarried until seven to eat breakfast and chat with Jimmy Durant, the local ranger, before shouldering packs. Bostock Summit (6000 ft.), a distance of six or seven miles, was reached in three and a

half hours. Here the trail ends and the bush takes over, with a vengeance. The height of land is the hydrographic apex for three streams: Bostock Creek, up which we had just come; Farm Creek, down which we had to go to reach Tangier Creek; and Mountain Creek. We spent the rest of this day and all of the next in an excursion down Mountain Creek and back up to Bostock Summit.[3] Farm Creek claimed our attention on Monday. At four in the afternoon of Tuesday the 13th, drenched after four days of rain and wet bush, we tramped into camp at Tangier Pass (5760 ft.).

Tangier Pass is an ideal base from which to climb and explore. Immediately above the pass are the peaks of the Sorcerer Group. Rolling meadows, scattered stands of fir, and many small tarns form an esthetic setting for a camp.

In spite of persistent bad weather, Hendricks, Scoredos and Peterson succeeded in ascending Sorcerer Mountain (10,376 ft.) the day after the drops. The climb was a battle rather with the elements than with technical difficulties. The west arête provided the natural approach to the twin summits, a snow ridge connecting the two. Whirling snow and mist reduced visibility at times to a scant few feet. The cirque south of the west arête was used for the descent.

The patter of rain in the early dawn of July 14th discouraged any thought of activity, but by seven it had stopped. Grabbing rucksacks, we turned to the westerly peaks above the pass. The first glacial basin south of the pass provided a convenient avenue for gaining altitude. After climbing 1000 feet of scree and moraine, clambering over a patch of cliffs onto névé, and continuing southwesterly, we rounded the base of a shoulder to attain Candy Col (8200 ft.) on the Smallfry Ridge at 11.10 A.M. Smallfry Ridge forms a two-mile arc of rock, punctuated by four peaks. A glacier on its west feeds Downie Creek. A corniced arête curves gracefully upward and southwest from Candy Col to Mount Eric (9200 ft.), the southern end of the ridge. We kicked steps up the snow, climbed its quartzite defenses, and gained the top by 1.00 P.M. A small cairn was erected.

Mount Martha (9300 ft.) is the northern terminus of the Smallfry Ridge. Since it was a tempting prize, we started across.

[3] Mrs. Kauffman and Miss Mary Neilan accompanied us from Flat Creek to Bostock Summit, down Mountain Creek and back to Bostock Summit.

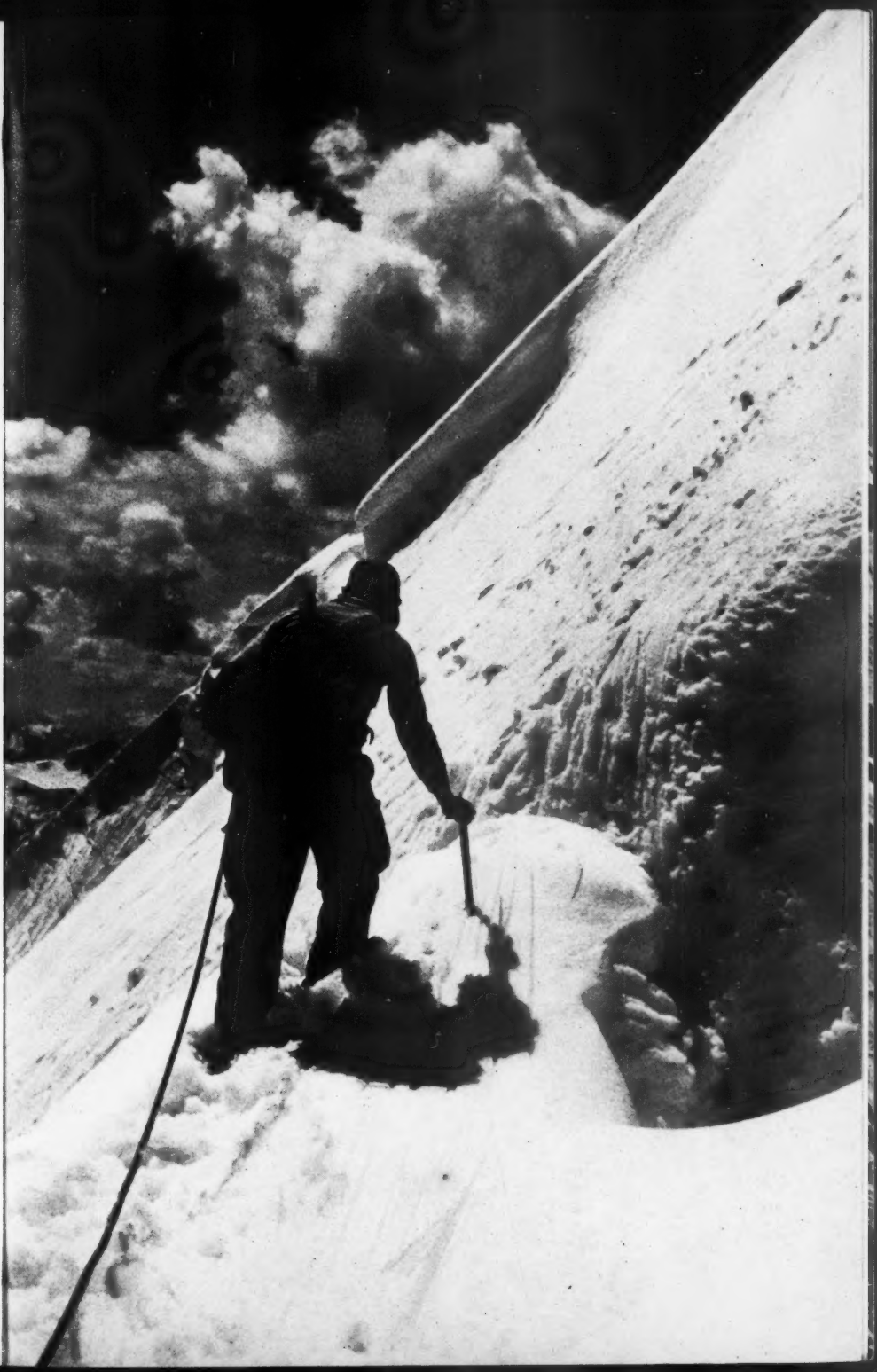
The entire ridge and two peaks, Mount Station (8760 ft.), with its survey stoneman on top, and Obstacle Peak (9000 ft.), intervened. We retraced our steps to Candy Col and from there had a steady rock scramble that eased off only on the last hundred feet of Martha. Snow flurries, mist and clouds enveloped us from time to time, but fortunately did not linger long or appreciably hinder progress. We paused on Martha to build a cairn and went on to the next col. This connects with Martha Glacier, which flows down the first lateral trough north of Tangier Pass. We followed the glacier, then contoured over moraine and alps to a point above the pass, and finally descended between two cliff bands to reach camp at 9.00 P.M. in semi-darkness.

Most of us felt that a day of rest and relaxation was in order, but Fabergé and Hubbard thought otherwise. While we loafed, they climbed Mount Sorcerer via the west arête, completing the round trip in twelve hours.

Sorcerer Creek originates as a modest trickle, quickly picks up volume and drops down the northern slope of Tangier Pass. Augmented by the drainage from Martha and Holway Glaciers, it cuts a deep canyon in its dash to join Downie Creek. The eastern escarpment above Sorcerer Creek is a long battlement with only one near breach, a high saddle (7200 ft.) between Sorcerer Mountain and Bachelor Peak (9058 ft.). This gap is the portal to the inner recesses of the range. On the 16th, Hendricks, Peterson and I set out to reconnoiter the Bachelor Pass area. From camp to Waverly mine, the old wagon road is still discernible. Beyond, the shaft bush forms a thickly matted barrier, and we struggled for three hours to force a way to the alps of the pass. At last the eastern shoulder and upper snow field gave access to the summit of Bachelor Peak. On the return, instead of repeating the morning's battle, we contoured high along meadows and open timber, and then descended to the mine road.

From neighboring peaks and cols Mount Holway (10,002 ft.) is seen to fine advantage. The steep southeast face is completely clothed in a mantle of snow. A sharp rock face, towering above Holway Creek to the northeast, was first ascended in 1911 by Holway, Butters and Palmer. Since then it has remained inviolate. At dawn on Saturday, July 17th, we were scrambling up the westerly cliffs above camp. Martha Glacier brought us to the col west of

CROSSING THE BERGSCHRUND ON HOLWAY
Photo, A. Wexler



Mount Martha on the Smallfry Ridge. A wind-swept schrund, about 35 feet wide and equally deep, curves in a huge semicircle around the south side of a small bastion just west of the col. We entered the schrund and walked its length. Upon emerging we were greeted with the striking prospect of Holway, its southeast face a white wall rising out of a sea of snow. The névé, still firm, provided a level walk before it steepened into the face proper. For 1500 feet steps were kicked in the high-angle snow. A bergschrund was crossed on a narrow bridge. On the top at noon we gazed appreciatively at a horizon that extended from the Adamants and Sir Sandford in the north to the Battle Range in the south. Across Downie Creek, the sprawling form of Carnes Mountain, with its five parallel hanging glaciers and its long summit ridge, almost filled the western quadrant. To the northwest, beyond the Columbia River, the Monashee Mountains displayed extensive snow and ice; but the peaks are subdued and gentle compared to those in the Selkirks. After an hour we retraced our steps and walked into camp at 5.30 P.M.

On the 18th camp was broken, equipment and rations for five days apportioned, and loads packed. It was our hope that in three days we would traverse the 20 miles that separated us from the Sir Sandford area. Scattered views had indicated that the travel would be high and open for a considerable distance. One major question still had to be resolved. Beyond Bachelor Pass to the north, a gap in Sicklebar Ridge, so named because of its saw-toothed crest, gave promise of a short cut to Argentine Pass. This would circumvent a tedious tour into the valley of Bachelor Creek to the confluence with its north fork and up the latter to the pass. There was considerable doubt as to whether the far side of the gap was climbable or terminated in a sheer wall. It was a calculated risk.

It took three hours to reach Bachelor Pass. We crossed the east arête of Bachelor Peak 500 feet above the pass, walked along ledges and moraine, traversed Bachelor Glacier to a prominent cliff band, and ascended to high névé. A cold rain forced us to crawl under a tarp. After an hour it slackened, enabling us to proceed. First a delicate passage over bare ice, then a climb up vertical rocks, and Sicklebar Col was ours. Not until we stepped over the divide and looked at the gentle snow field on the other side did our fears of an impasse vanish. As evening approached, we reached the buttress

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ADAMANT GROUP

Top: looking south from Observatory Peak. Left to right: unnamed peak, Adamant (with its three summits), Turret and Austerity

Bottom: looking north from Azimuth Col across Adamant Glacier. Left to right: Turret, Adamant, unnamed spire and Pioneer

Photos, A. Wexler

overlooking Argentine Pass. In the shadow of twilight we chose an airy patch of heather at 8000 feet as a campsite. Supper was eaten by the light of the camp fire.

The next day we travelled seven miles from Argentine Pass to Moberly Pass. This section of the route is the finest of the entire crossing. The eastern ridge above the south fork of Goldstream River stretches northward through virginal alpine wilderness. The crest, three to ten feet wide, at an elevation of 8000 feet, provides easy walking along a skyway that offers an open view and superb scenery in every direction. We took time on the way to climb Centurion Mountain. Hendricks, Hubbard, Fabergé and I romped up the 1000-foot west arête to the summit in 45 minutes and down the west face in 30 minutes. It was a delightful scramble. Late in the afternoon we left the snout of the west Centurion Glacier and made camp above Moberly Pass (5825 ft.).

The heather-covered alp on which our three little tents were pitched overlooks the divide between the east and west drainage of the region. The valleys of the Gold and Goldstream Rivers are deep gorges that extend diametrically opposite to discharge their waters into the Columbia. From our high-level home we could look across the trench at the streams of ice that send their glacial waters cascading down thousands of feet into the verdant forests of the valleys. The Sir Sandford and Goldstream Glaciers, even though obviously retreating and exposing naked rock, are still large bodies of ice. The southern reaches of Mount Sir Sandford rise abruptly from the depths of Gold River in an attractive sweep of limestone cliffs.

The sun had risen high on the morning of Tuesday, the 20th of July, before we reached Moberly Pass. By keeping to the meadow slopes along the true left edge of Sir Sandford South Glacier, we avoided the lower morainic debris and gained the ice just below the main fall. In the lee of a boulder we weathered a storm, and then turned to the job of surmounting the icefall. In a few minutes we saw three men and a dog come into view and weave down the center of the glacier. Greetings were soon exchanged with Kauffman, Ferris and Putnam, who were on their way south to Flat Creek.

Having parted company, we resumed climbing. The weather took another turn for the worse. Mist and snow swooped down as

we topped the height of Sir Sandford Glacier. Four miles of steady trudging brought us onto Silvertip Névé, then two more miles took us to Silvertip Glacier, and finally another mile landed us on Azimuth Mountain. Here the campsite of 1946 was relocated and tents erected on a platform levelled into the 30-degree slope of the mountain 300 feet above the snout of Silvertip Glacier at an altitude of 6400 feet.

The following day was decreed a holiday. On Thursday we located the provisions cached for us at Thor Pass. We left camp at 5.10 A.M., contoured west along the slopes of Azimuth, climbed to Azimuth Col, descended the north side, crossed knee-deep in the slush of Adamant Glacier, and ascended to Thor Pass. As it was still early, Pioneer Peak (10,660 ft.) was selected as an objective. Gothics Névé is a high glacial basin on the east of the Gothics and discharges its drainage into Tabernacle Creek. From the pass a path was chosen through a network of crevasses of the névé to the summit pinnacle of Pioneer. A tricky traverse of 20 feet over glare ice, followed by 250 feet of rotten rubble up the east arête, brought us to within 50 feet of the summit. To reach the top, we cut steps across a 50-degree ice slope. The summit has four distinct peaks, each of which we investigated. On the high point is the original cairn left by Palmer, Holway and Butters in 1911.

The weather had been acting up for some time, and now clouds rolled in, shrouding the mountains in a veil of grey. From time to time the wind tore away this covering to reveal the granite spires of the Adamants. Since we felt no desire to tarry long, at one in the afternoon we commenced the return trip. At Thor Pass provisions for six days were collected. A drenching rain caught us on Adamant Glacier; but at 7.30 P.M., thoroughly waterlogged, we were back in camp.

The next three days were wet, in typical Selkirk fashion, and confined us to tents and tarp. It was not until Monday, July 26th, that the weather improved sufficiently to justify a climb. At 5.00 A.M. we left camp, turned west, and moved toward Silvertip, one of the remaining virgin peaks in this region. Silvertip Glacier was crossed above the icefall to the east arête, and the latter followed, over snow and rock, to the summit (9450 ft.), which we reached at 8.45. (Just below the summit on the north arête are several hundred feet of rotten rock.) We proceeded down the north arête to Silver-

tip Pass (8500 ft.) and without pause ascended the ridge to Belvedere (9839 ft.). This is an excellent location from which to view the northern faces of Turret and Austerity and scrutinize the southwesterly approach to the Lower Blackfriar. Although only 700 feet separated us from the top of the Lower Blackfriar, the sheerness of the rock and the lack of any obvious route was discouraging. The black granite has the boiler-plate appearance that is so characteristic of all the Adamant Peaks. A mixture of snow and rain forced us to retreat at 1.30 P.M.

Mount Sir Sandford was in an ugly mood during our stay at Azimuth Camp. Bare ice on the "long slope" and "hour glass" made our 1946 route impossible. An attempt up the west arête was contemplated, but rain and fog stymied plans.

On July 28th we broke camp and headed for Fairy Meadow. At Thor Pass additional supplies were collected from the cache. With ample time at our disposal, Hendricks, Hubbard, Fabergé and I climbed Thor Mountain (9800 ft.) by circling to the east on Gothics Névé, attaining the east arête and following the latter to the summit. On the descent Hendricks made a valiant attempt to pull the mountain down on top of himself, but succeeded only in dislodging a 50-pound slab and cutting one strand of a new nylon rope. With heavily laden packs, we crossed Gothics Névé to Friendship Col, cut steps down 50 feet of ice on the north side of the col, traversed the two decadent glaciers along the northerly base of Sentinel Ridge, and reached Fairy Meadow (6200 ft.) at dusk. Fairy Meadow is well situated as a base for climbing among the Adamants from the north. It is sheltered behind the true right moraine of Granite Glacier, commands a view of the northern exposure of the Adamants, and permits a wonderful vista to the northeast across the Columbia River into the Rockies.

In 1946 we had viewed the bulging icefalls and steep névés that cling to the northern slopes of the Adamants, but had made no attempt to climb any of the major peaks. At that time, two outliers, Unicorn and Sentinel, were scaled. We were now determined to have a try at some of the main peaks.

At 5.00 A.M. on Friday, July 30th, Hendricks, Hubbard and Fabergé set out with Austerity (10,960 ft.) as their goal. From camp they proceeded along the alps and moraine of the true right edge of Granite Glacier to the buttress of Sentinel Ridge. Here the ice

was crossed to the base of Austerity; then steps were kicked up the snow to the west arête, just below Mount Ironman (10,000 ft.). Adjoining the rock of Ironman was a patch of ice that had to be traversed eastward. The tricky slope required 50 steps and took two hours. Several cracks and chimneys led to the summit of Ironman, a first ascent. Above 10,000 feet, they climbed in fog over interesting rock patches to the top of Austerity. On the return, Ironman was negotiated by two rappels and the ice traverse avoided. They were back in camp by 7.30 P.M.

The following day was devoted to minor excursions. I clambered solo up the crags of Sentinel Ridge to Observatory Peak (8700 ft.). It was an excellent point from which to observe and photograph the mountains.

When a shout jarred me into consciousness at 2.15 A.M. on Sunday, I realized that big plans were brewing. Hendricks, Hubbard and I left camp at 3.15, took to the alps and rapidly gained Granite Glacier. It was not until this moment that the final decision was made to attempt Turret Mountain (10,910 ft.), the highest unclimbed peak in the Rockies and Selkirks. Turret occupies a unique position in the Adamant Group. On the east, it is abutted by the triple-peaked Adamant Mountain (10,980 ft.), and on the west by the almost equally impressive giant, Austerity Mountain (10,960 ft.). The north face is high-angle ice, heavily laden with hanging glaciers that discharge debris down obvious avalanche tracks, and well broken with crevasses and bergschrunds. The south face is a sheer 3000-foot wall. To climb the south face was clearly impossible. The north face was menaced by active ice avalanches. Two approaches remained. Turret could be attacked either from the east or from the west. If from the east, then Adamant would first have to be climbed to put one within striking distance. If from the west, then Ironman and Austerity would have to be traversed. Obviously, there was no easy route up the mountain. We ruled out the eastern approach because we were not certain whether Adamant could be climbed from Granite Glacier. Since a route had been pioneered to Austerity two days before, it was agreed to use the western approach.

A constant pace over the previously evolved route brought us to the summit of Austerity by 9.10 A.M. Our objective was in sight, deceptively close, its summit 50 feet below us and an eighth

of a mile to the southeast. We descended the rock arête toward Turret to the col between the two peaks. It was continuous rock climbing that invited caution because of the high angle to the south. At the col we paused to gaze at what lay ahead. The faces of Turret meet to form a sharp arête. The north face is 60-degree ice that sweeps down for 1500 feet to a bergschrund. The south face is 3000 feet of vertical granite. We marvelled at its polished expanse, but gave it no thought of climbing. The prospect of climbing the ice did not appeal to us. The arête proper seemed to be broken into a succession of steps, with 15- to 20-foot risers. If these risers were climbable pitches, then the ridge might go.

We moved up the arête. Since the first few pitches were easy, we pressed on. Then the slope increased and the risers became vertical, with shelves of one to three feet for belaying. Packs and ice-axes were left on a ledge, and the leader changed into sneakers. On one pitch the second man slipped in trying to climb a perpendicular finger crack with Bramani shoes, and had to be lowered. It was only a momentary defeat, for by moving five feet to the right he found several small nubbles that solved his difficulty. The exposure of the south face added considerable interest to the technical rock problems. We used four pitons, and the arête succumbed. At a quarter to twelve we were on top.

From the plane and from Belvedere, Turret had appeared so unassailable that it was difficult to believe we had made the ascent. A spectacular view of the immediate peaks was our reward. The east arête of Turret connects with Adamant, but the upper 200 feet of the latter show no obvious break or route up the summit cliffs. The sight of the north faces of the Blackfriars is a memorable one. These are twin masses of black rock with smooth vertical faces.

The darkening of the sky in the southwest gave warning of approaching storm, and so at 12.30 we began the descent. Three long rappels circumvented a number of the tricky pitches. From the col we climbed Austerity, went on to Ironman, and finally reached the snow. On the level of Granite Glacier the storm broke furiously. The wind lashed at us; and hard pellets of hail, some over half an inch in diameter, struck with stinging force. By quickening our pace we made camp by 5.30.

One of the interesting geological features of this region is the

DESCENDING EN RAPPEL FROM THE SUMMIT OF TURRET MOUNTAIN
Photo, A. Wexler

sharp division between the igneous rock of the Adamant Group and the metamorphic rock of the Edfalls Group. As one looks northward from Granite Glacier, the contact is obvious, for the black granite contrasts markedly with the brownish yellow of the metamorphic rock. A trip in the Edfalls direction got under way at 6.00 A.M. on Monday. Fabergé, Hubbard, Peterson and I leisurely left camp, took to Granite Glacier above the icefall, crossed to Enterprise Glacier (the small northernmost tributary ice stream), followed it to Yellow Mountain, and climbed the south arête of the latter to its summit (8800 ft.). Yellow is the first metamorphic peak north of the Granite Group. Its rock is well broken and crumbles on touch. The return to camp was made along Yellow Glacier, the lowest westerly tributary to Granite Glacier, and then across Granite Glacier below the icefall.

The time had come for us to bid farewell to Fairy Meadow and depart for home. At 6.00 A.M. on Tuesday, August 3rd, packed and ready, we plunged into the bush of Swan Creek. After a day's wrangle with slide alder, devil's club, scrub growth and all the other hazards and impediments of trackless wilderness travel, we camped on a gravel bed 150 yards from the Columbia River. The next morning the rubber raft, cached by the Kauffman party and still inflated, was located. In less than two hours, men and equipment were ferried across the Columbia River to the Big Bend highway.

So ended our mountain pilgrimage. The physical accomplishments were greater than we had anticipated. We spent one month in the mountains, of which seven days were utilized in effecting the first northern traverse of the Selkirks, a journey that involved pioneering a route through virgin alpine territory, crossing twelve passes and cols, and climbing 15,000 feet. Sixteen peaks were scaled, of which nine were first ascents and five were second ascents.

MOUNT SIR SANDFORD
Seen between the walls of Turret and Upper Blackfriar
Photo, A. Wexler

Operation Oppy

JOHN C. OBERLIN

JULY 12th, 1946 . . . The full moon, shining down upon the North Saskatchewan River that evening, silhouetted a curious spectacle. Three human figures piled high with packs and duffel, and carrying long poles in the manner made familiar by St. Christopher, were splashing and staggering through the river's swollen channels toward the Banff-Jasper highway. A little later, they reached their camp and cars, at the corral-fenced gravel flat pleasantly named the "Graveyard," and sat down heavily.

The party consisted of Fred Ayres, of Portland, Oregon; Frank Cavenagh, of Cleveland; and the writer. We had returned from a rather strenuous back-packing excursion up the Alexandra River to the Lyell-Alexandra group on the Continental Divide. I say up the *river* advisedly, as a large part of the trip was under water. It had rained every day; the Castleguard and Alexandra Rivers had risen greatly and submerged much of the trail, where there was any trail; and we could only be thankful not to have been marooned on the west bank of the North Saskatchewan looking hungrily across at the highway. No peaks had been climbed, and all we had to show for our efforts were memories of an acrobatic attempt on the ice cliff of the Alexandria Glacier at the foot of Mount Alexandra, and of another jaunt up the East Alexandra Glacier where we turned back in driving rain, and of views of the great rock and ice cliffs sweeping up into the clouds swirling overhead. We did succeed in photographing the Forbes dirt bands on the Alexandra Glacier, which excited the interest of Mr. Joel Ellis Fisher.[1]

And we had seen Mount Oppy, or rather parts of it. According to Dr. Thorington, it was the highest unclimbed mountain in the Canadian Rockies. Its 10,940-foot summit had generally been well concealed, but the real reason why it had remained unclimbed

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[1] *American Journal of Science*, 245: 137-45, March 1947. Cf. *A.A.J.*, VI (1947), 331.

was clearly just what might have been expected: no obvious way up. Outram had made the first ascent of Lyell No. 2 from this side of the range,[2] and Sterling Hendricks and Rex Gibson had ascended the East Alexandra Glacier to the col from which they made the first ascent of Mount Farbus,[3] but otherwise this side of the wall of peaks had been left severely alone. Would-be climbers took a circuitous route over Thompson Pass to the north, or came in from the south to attack Mount Lyell up its long and relatively easy south glacier. Writing of Mount Farbus, Palmer and Thorington say, "Cliffs prevent further traverse of the main crest toward Mt. Oppy."[4]

Clearly, an "Operation" was called for. Nothing less would do. After further roaming, which took us up Bugaboo Spire and Howser Spire in the Purcells, Assiniboine, and Mount Louis near Banff, Fred and I parted in the Tetons with plans to meet again in 1947.

August 1947 . . . The "Graveyard" again—this time with rubber boat, lifeboat emergency rations, mountain infantry tents, and air mattresses. "Operation Oppy" was under way! The party at this point numbered five; but illness eliminated one, and Fred bit hard on a date, in unjustified confidence that the pit had been removed as advertised, and split a tooth. With Fred also laid up for repairs, the party set forth without its two best rock climbers. At least the remaining three, Don Davis, Don Woods and John Oberlin, had first names which rhymed, an omen of harmony. We found, in practice, that a certain amount of confusion also resulted, since we did not always enunciate clearly.

After fording the North Saskatchewan by a route Fred and I had previously prospected and marked, we cached some emergency supplies (the boat was not used) and started up the Alexandra River. By keeping to the flats as much as possible we made fairly good time, but as we approached the fork of the Castle-

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[2] James Outram, *In The Heart of the Canadian Rockies* (New York: Macmillan, 1905), pp. 388-94.

[3] S. B. Hendricks, "Summer Ascents of Columbia, North Twin and Farbus," *A.A.J.*, III (1938), 151.

[4] *A Climber's Guide to the Rocky Mountains of Canada*, 3rd ed. (A.A.C., 1940), p. 149.

guard River our troubles began. Both Ron and I lost our footing in the icy water and had to battle hard to regain it, weighed down as we were by 65-pound packs. Eventually we reached the Castleguard, but it was high, so we pitched camp with the feeling that we had done enough for one day.

The next morning (1 August 1947) Ron prospected a crossing while Don and I broke camp. After retreating with difficulty from an attempt upstream, Ron followed my last year's zigzag route, which I pointed out from the comfort of the bank, and he was soon across. When Don and I followed, we found a fire going to dry out by while we made up a cache of food and equipment not needed on the mountain. Then we crossed the box canyon of the Alexandra on Hendricks' and Gibson's pole bridge and cramponed up the lower icefall of the East Alexandra Glacier. The day was lovely, and the peaks glittered in the sunlight. Oppy, visible this time, seemed as remote as ever.

We had even thought of camping on the Lyell-Farbus col, but reconsidered as the day wore on and the steep upper icefalls came into view. The one which comprises a continuation of the great ice cliff on the northwest wall of Mount Lyell was more broken up than the year before, and we camped just below it on the glacier, but separated from it and the cliffs to either side by commodious hollows which made us safe from avalanches. The slopes of Lyell rumbled day and night as huge sections of the ice cliff broke away and toppled down to the glacier below, while snow and rocks cascaded down Oppy with the roar of an express train passing through a way station. The falls were so frequent that by day we would turn to look only when the noise betokened an unusually large one. At night each one sounded as if it intended to pass right through the little tent in which all three of us lay.

When morning came, having awakened to the sound of rain spattering on the tent, we lay in our sacks and ate. The mountain infantry tent had an entrance at each end, considerably reducing condensation; and it proved of exceptional convenience in other ways. By 11.30 A.M. the rain had stopped. We crawled forth and set out to prospect a way up the icefall. Keeping well to the right, we made good time kicking steps in the steep snow along a somewhat devious route between crevasses and yawning holes. As soon as possible, above the steepest part, we angled toward the center of

the glacier to avoid possible avalanches from the Farbus cliff. Several huge crevasses stretched from side to side, but each was provided with a reasonably convenient and substantial bridge. Seeing the col not far above us, we descended, knowing our route was assured thus far. Some water drips in a crevasse near camp saved us the necessity of melting snow on our little Primus stove, and we therefore fared very well in the matter of cooked meals, which Don prepared sitting cross-legged in one end of the tent.

Sunday, August 3rd, was the day, and we started out at a fairly early hour. The weather seemed reasonably settled, and the sun shone brightly on the Columbia Icefield. Mounts Athabaska and Saskatchewan also showed to advantage, while Castleguard became diminutive. The view from the col quite took our breath away, and we spent 20 minutes there to regain it, giving all our cameras a thorough workout. My supposition that the Lyells, Nos. 3, 2 and 1, could readily be climbed from here was confirmed, as the snow slopes did not look too difficult.

The ascent of Farbus proved an easy walk, partly on quartzite and partly on snow. This was the second ascent. The summit was, of course, corniced, so we dared not venture far enough out to look down to our little tent on the glacier below. Dropping down a little on the south side, we swung around the slope and came out on the edge of the southwest rock wall supporting the upper snow. The view here of the Oppy cliff was most depressing, and we all felt that our chances of getting up it in the time available were none too good. Moreover, the steep snow ridge leading down from Farbus to the Farbus-Oppy col was unexpectedly spectacular: it had a continuous cornice toward the north while on the south it swept down at a steep angle in a series of scallops to the top of the rock cliff. We roped up here, and I started stamping out large steps in the soft snow while Ron came last as anchor man. For considerable stretches the shaft of the ice-axe would slice through the snow in a manner which cast some doubt on its dependability in the event of a slip; and I backed down carefully, stamping platforms for both feet, side by side.

The col, once reached, was easily passed, although it too was corniced above the abrupt northern precipice. We then climbed up the broken ledges marking the continuation of the ridge to the first of the two long shelves which extend across the entire base

of the 500-foot cliff on this side of Mount Oppy. Traversing to the left about 150 feet, we now ascended to the second shelf and were forced to decide whether to try the cliff or to follow the ledge southward around the corner, where we might eventually reach an ice tongue running down from the summit snow field. We chose the cliff because it no longer looked quite so nasty and the other route was probably too long.

An upward traverse to the right, up steep snow, took us almost to the left-hand side of the prominent chimney which splits the cliff from top to bottom, and we started up the steep but not very difficult limestone ledges. The cliff to the left began to steepen and eventually overhung, forcing us into the chimney about half-way up the cliff. A waterfall had the limestone rock in an unpleasantly slippery state, and I skidded back onto a ledge with a jolt when two handholds broke out as I tried to haul myself up an overhang. After putting on the rope which had been removed at the col, and also a couple of Band-Aids on my fingertips, I tried a layback a little to the left, but spray from the falls made the rock too slippery for my boots to grip. Not having time for many such false leads, we now determined to descend about 25 feet and cross the chimney to a smooth wet ledge which could be seen disappearing around the corner to the north. This proved to be the sought-for key, and we were soon hurrying up a series of easy ledges "just like stairs."

The ledges petered out into steep snow slopes crowned with a continuous cornice which was much too large for us to think of breaking through. The section of cornice overhanging the snow slope funnelling into the head of the chimney was particularly impressive. I had some notion of traversing on the snow shelf or scoop directly under it, but gave this up when I found that the intervening slope was very steep ice with a deciduous snow covering. Dropping down a few feet to the head of the chimney, however, we had to cut only three or four steps to get across, and we soon scrambled up under the cornice. Here we traversed left along the top of the rock cliff until we found a point where the cornice was only about eight feet high. Hacking a gap, I drove in my axe and hauled myself up. The others promptly followed, and we looked across the snow to the summit of Oppy, still some distance away and well above us. First over a snow hump and then down slightly we

TOWARD THE SUMMIT OF OPPY

Photo, J. C. Oberlin

trudged along, the snow holding for a moment and then breaking through at each step. For a short distance we sank in to the thighs, but happily the snow soon became firmer as we pushed along. Clouds were blowing by from the west, but there was no rain or sun—just a chill, gusty wind. The cornice was huge, of the massive mushroom type, and we carefully belayed each other up to the summit, which we reached at 3.15 P.M.

Alexandra still looked imposing, but unclimbed Douai, in between, was of no consequence. The snow ridge between Oppy and Alexandra, though long, did not appear at all difficult. We no longer had any thought of following it and turned in our tracks, giving Ron the job of setting the pace to reach camp comfortably before nightfall. I built a little cairn at the top of the cliff and left a record, this being the nearest rock to the summit on our route. Reascending the steep snow ridge of Farbus, we found the wind becoming more capricious. Several gusts forced us to stop and hang on. It also blew some of the waterfalls back up over the cliff to provide us with a reasonable facsimile of rain. We thus soon had completed the second ascent, first traverse, third ascent, second traverse, and first ascent by the west ridge of Farbus. We were through with Farbus!

After a halt on the Lyell-Farbus col, Ron led us down the icefall to camp in short order, well before dark. We turned in, pleased with the day, and slept soundly.

With the morning came rain, which meant we would not climb the Lyells. When eventually it stopped, we broke camp in leisurely fashion and descended to the cache where we had a real camp, with a fire. Off to a good start next day, we forded the Alexandra rather than the Castleguard and reached the highway by 5.00 P.M. A little later we were reporting in to Chief Warden Black, consuming hot tea and cake served by his hospitable wife, and telling them all about it.

ALEXANDRA GLACIER, 1947
Left to right: spur of Oppy, Mount Douai, Alexandra. Woods and Davis in the foreground

Photo, J. C. Oberlin

More First Ascents in the Coast Range of British Columbia

Fred Beckey

[This is a sequel to William L. Putnam's "First Ascents in the Coast Range of British Columbia," *A.A.J.*, VII (April 1948), 25-32.—*Ed.*]

SHORTLY after dawn on 20 July 1947, the Tellot névé glistened in the early morning sun. As the four of us at High Camp—Charles Shiverick, Harry King, Leonard Winchester and I—had made plans for a reconnaissance of Mount Serra, and as the highest peak seemed inaccessible from the north or east, we crossed a steep ice col betwen its first peak and Stiletto, with the hope of traversing to a route we had noted both from the air and from Dentiform. A long traverse took us to the brink of a lateral rim. After some scouting we found a 300-foot ice gully which gave access to a névé basin on the south side of Serra's first two peaks. Climbing through knee-deep snow on a 45-degree slope was tiring work. At 11,700 feet, I chopped some steps in glare ice to gain a rock ridge. Two hours of moderately difficult climbing on this sharp ridge ended the day's efforts, for we spotted a possible traverse that should lead to the "Y" ice gully just below Serra's summit. We plunge-stepped and glissaded down another arm of the basin, and then returned to camp via the traverse, finding an easier route 100 feet below our old steps.

We had planned to continue our route the next morning, but decided instead to take a shorter trip and chose the challenging Claw Peak. We descended one and a half miles of névé to its base, then climbed a snow and rock face to its west ridge. Having heard reports of the first attempt, we came well armed with pitons. The Claw Peaks are merely the continuation of the Tiedemann chain that separates the Tellot and Tiedemann Glaciers. The west and highest Claw Peak rises opposite a great icefall which spills the Tellot reservoir directly to the Tiedemann.

After donning sneakers, we roped in twos to meet the first major obstacle: a great slab. A strenuous layback provided the solution to its problems, but then a steeply pitched, knife-edged ridge

loomed overhead. The granite sides of the ridge were smooth and without enough cracks to justify an attempt. Straddling technique helped on the first portion. I placed two pitons from awkward stances, continuing the very difficult ascent. For ten feet it was necessary to make a hand traverse from the sloping ridge crest while hanging directly above the Tellot, 500 vertical feet below. Beneath a great tilted slab I placed another piton, and struggled to easier ground.

Consolidating here, we continued by making an airy traverse to the right of the ridge and then climbing directly to a notch 100 feet from the summit. Here another piton was needed for safety before a rounded arête led to the very peak. The profile of the knife-edged ridge was such that we were unable to rappel and had to make a very difficult climb down.

Little did we suspect how tragic July 22nd would be, as we followed our steps up the basin on the south side of Serra. The circumstances surrounding the death of Charles Shiverick have already been reported in these pages.* Whatever the cause of the accident, it brought on us, and on the country, the loss of a splendid companion and a fine mountaineer. We agreed that evacuation of the body would be unjustifiably dangerous, and subsequently held a burial service and erected a cairn at the head of the icy gully. In tribute to Charles Shiverick, we have asked that his name be given to the fine isolated peak which he had climbed with Putnam.

We descended to Base Camp on the 23rd and broke the bad news to the other four, whom we met on the lower Cataract Glacier —Putnam, David Michael, Graham Matthews and Frank Magoun. Putnam turned entire charge of the expedition over to me and left, with Michael, on the 24th, wishing us all good luck. Winchester, King and I were slowed by injuries. Matthews went hunting often, generally returning without luck, but always bringing a bucket of berries. Rain fell almost continually.

Rain stopped on July 28th, and interest in climbing revived, although three of us were not yet up to par. Pocket Valley beckoned,

* See *A.A.J.*, VII (April 1948), 89-91. It should be pointed out that, from the day of the accident, considerable attention was of course devoted to problems surrounding the proposed evacuation of Charles Shiverick's body. —*Ed.*

a green gem between the Parallel and Scimitar Glaciers; and we packed five days' food and equipment to a camp near the Parallel Glacier that afternoon. Early on the 29th Magoun, Matthews and I left this 4000-foot base for Frontier Mountain, the castle-shaped rock peak of 10,000 feet at the west side of the 7200-foot pass leading to Frontier Creek and the Klinaklini River. We ascended morainal debris, the Cornelia and Frontier Glaciers, and some very soft snow in a steep couloir. The south face offered an airy 500-foot ascent in sneakers, the latter part of which was quite difficult and exposed. Our vantage point proved excellent for mapping unexplored regions to the north. At daybreak on July 30th Winchester and King left for the 10,000-foot peak just east of Frontier, which is the highest point on the long ridge from Mount Projectile to Granite Creek. From the pass on its west they ascended snow and rock, then an icy gully to the north ridge. The angle of the ridge proved to have been most deceptive, for it was very narrow and exposed, requiring continuous belaying. Mount Delusion was considered a good name.

The next day we all left for peaks at the head of the Parallel Glacier. We circumvented its lower icefall by a passage on its left. Near the base of Threshold Peak, some five miles up the glacier, a narrow snow bridge proved a thrill. Here we split. King and Matthews made the ascent of 9600-foot Threshold Peak, a face climb of ice and rock that was quite trying. The rest of us climbed 10,000-foot Hermit Peak. Only the summit pinnacle and a bergschrund near the Geddes col were troublesome. The five of us reached camp about midnight.

On August 2nd Magoun and I left the valley at daybreak to climb Outpost Mountain, the 10,500-foot ice peak just north of Mount Roovers. Access was a problem. Several miles up the Parallel Glacier, we turned north to ascend its north branch, which we called the Oval Glacier. A 2000-foot ice cascade made reaching the upper Oval a difficult procedure. We climbed through many rubble piles, chopped steps up teetering séracs, and worked across countless ice bridges. Luckily, there was a route through, and we found it. We then trudged north across several miles of breakable crust to the base of the mountain, had lunch, and climbed an ice face to a narrow rock crest at the flank of its east ice face. Except for a few exposed traverses, we had little to worry about. The clear atmosphere allowed us to view distant peaks in all directions.

We saw that we had scaled all the outstanding unclimbed peaks we could reach from Pocket Valley, with the exception of Mount Roovers. The east face and adjoining ridges of its towering summit seemed hopeless. On the descent we avoided the dangerous icefall by traversing east across the south face of an unnamed peak flanking the Oval Glacier, before dropping to the Parallel.

Since several planes had flown near us recently, and had us wondering, Winchester and I returned to Base Camp. At 11.00 P.M. on August 3rd King, Matthews and Magoun left for 10,600-foot Roovers. They climbed to the ice col overlooking the Roovers Glacier via the Parallel. At dawn they descended 1000 feet and travelled down the Roovers Glacier to the center of the 2500-foot west face. They climbed a long series of ice gullies, rock arêtes, and snow patches to gain the south ridge near the summit. The whole ascent was very exposed. In the early afternoon they left the summit and returned via the same long, exacting route. In the dark, they had to climb to the ice col on the Parallel-Roovers Glacier divide, and then make the long descent to Pocket Valley. After 28 hours of climbing, they took advantage of some extra time to sleep.

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On August 9th King, Magoun, Matthews and I made the tiring ascent to the Tellot again. Winchester, having planned to be out by this date, had left. Ever-widening crevasses made route-finding on the Cataract Glacier more of a problem than before. As we reached Cataract Col at six, a plane message dropped to us stated that it was urgent we reach the Tiedemann Glacier in three days, conforming with evacuation plans. King and I climbed empty to High Camp and brought the tents and some duffel to the base of Claw Peak, where Magoun and Matthews had brought the remainder of our duffel from the col. In the dark we set up camp on a rocky brink overlooking the névé slopes leading to the Tiedemann Glacier. Even though it was very cold at night, it seemed appreciably warmer here than at High Camp. A cloudy night brought new snow in the morning, stalling activity.

The 11th dawned brilliantly, so King and I reascended the very difficult Claw Peak, finding the climb every bit as exciting as before. In the afternoon we all descended 3000 feet to the Tiedemann Glacier, placing camp on a medial moraine. A plane

had dropped four food bundles across the glacier, so in the dusk we chased after them. Another drop provided us with more gas and two "walkie-talkie" (SCR 536) radios.

Our big hope was a clear day on which to try 12,400-foot Mount Asperity, provincial Canada's highest unclimbed peak. August 13th dawned beautifully, so we set out from camp. In less than an hour we turned off the Tiedemann, at about 6700 feet, and began climbing the glacier salient directly beneath the gigantic upper walls of the peak. In two ropes we worked up a crevasse maze that had only one route. A most insecure bridge at the junction of a crevasse and a hanging ice wall was very difficult. The cascading glacier here forced us over to the right, where we had to climb rubble and icy séracs. Above us was the great 2000-foot ice couloir leading to the serrated divide connecting Tiedemann and Asperity. A skewed tunnel cut through the overhanging upper lip of the bergschrund, providing a means whereby Magoun worked above the schrund, cutting away obstructions. Once above this, we made rapid progress, as crampons bit into the steep, grainy ice. As the sun struck the upper granite walls, it melted verglas, and small rocks showered down on us. We hurried to avoid the danger and reached a safe rest spot at 10,800 feet.

A steep ice pitch took us to the 11,500-foot ice col. We were struck by a terrific wind, which bit through all the clothing we could muster. The tremendous chasm of the Radiant cirque, below to the north, was an appalling sight. Blue ice seemed to cling to the north walls of the Tiedemann chain at terrific angles. After a lunch in a protected recess, we climbed east up a steep, powdery-snowed ice arête, and then a droop in the ridge which had a great cornice. Soon we reached the base of the final 300-foot rock face. Here we seemed stopped: a narrow ridge offered only a little hope. Both flanking faces were hopelessly steep and glazed with icicles. But a little advance revealed a way. I led a difficult traverse on glazed rock and then worked up 50 feet of iced rock to a small notch in the arête. Then a dry 80-degree slab taxed our ability. Finally Matthews, wearing Bramani boots, did a fine job of scaling the slab to a pinnacle suitable for belaying. In another rope length of glazed arête climbing, we joyfully finished the difficult climb at 3.00 P.M.

We were happy also to find shelter from the wind in a rock

cranny. Among the surrounding peaks, only Waddington and Tiedemann rose higher than our summit. We could see the waters of Bute Inlet and Middle Lake. The startling sheer faces of Serra, Tellot and Tiedemann attracted much attention, but so did Waddington and the Parallel Glacier peaks. Rappelling facilitated descent from the difficult rock ridge. The fierce wind blew so hard on the ice arête that we had to "duck walk," with arcs of rope far to the lee. After descending the treacherous caked snow of the ice arête, we donned crampons to begin the descent of the great ice couloir. It was pleasant to be out of the wind and also clear of the regions where rocks fell. The long couloir was again trying on the ankles. The many crevasses, the tunnel and the rubble slopes all gave us trouble, but without further incident we reached the tents at nine.

On a beautiful mid-August day, King and I made a reconnaissance of Mount Stiletto and its great west needle. We climbed to the ice col between the needle and Serra's first peak, descended 200 feet, and climbed to a notch at the west base of the needle. In four rope lengths of climbing up glazed rock and insecure snow patches, we reached a great slab. Here we changed to sneakers and traversed to a platform. I went up a series of short vertical granite blocks, placing one piton. In two rope lengths, King belayed me across an awkward traverse. Soon I was up a chockstoned chimney and reached the ridge between the needle and Stiletto. Routes appeared on both, but since it was already five, we deemed it best to wait another day. On the descent we left a fixed rope below the slab. In the evening the other two arrived from the Tiedemann Glacier camp. On the 16th we climbed to Stiletto's base, but waited for a local snow-showering cloud to clear. It did not clear by mid-afternoon, so we returned to camp. In the sun, the heat was terrific at times, but an afternoon cloud would immediately freeze water on the melt tarp. Technical climbing under such conditions was too dangerous on these exacting peaks.

The 17th was clear; but, since it was unbearably windy on the Tiedemann Peaks, King and I climbed Mount Shand while Matthews and Magoun scaled the east peak of McCormick, some ten feet lower than the west summit, which we had already climbed.

On the 20th Magoun and King joined Fritz Lippman and

Bud Gates, of the Sierra Club party which was now on the scene, in the successful ascent of Stiletto's needle. They followed our route to the ridge between the needle and the main peak. Here they made a traverse on the north face, and ascended a most difficult crack. A piton pendulum and a direct-aid pitch finished this very spectacular ascent. Even the descent *en rappel* was nerve-wracking. In the morning King and Magoun left for Base Camp. Matthews and I confirmed our suspicions that an attempt on Stiletto, with all the fresh snow on its ledges, would be unduly risky. Since we did not have time to await a clearing, we also left. The Cataract Glacier had changed much even since our ascent of 11 days before. Photographs of earlier parties show that these glaciers have receded generally, especially the Cataract. The Scimitar and Parallel Glaciers, however, seem to have held their own. Grainy ice can be reached on both just beyond their snouts.

On the 22nd Magoun travelled quickly to the raft ford, where he found Wilson and Batice. We all returned seven miles to Base Camp in the afternoon. Next morning, with three pack horses, we moved camp to the Homathko. Matthews and I were still interested in climbing a great peak in the Five Finger Creek region, between the Homathko forks, largely to scan unknown regions to the east. The rest of the party moved out in the morning of the 24th, wishing us luck, and leaving a little food and equipment for our use. They would leave caches along the route. Matthews and I took food for three and a half days and began strolling through the sandy forest to Five Finger Creek. Since this raging stream emerges from a narrow gorge, we had to climb 1000 feet up the forested hillside and traverse a mile to gravel bars farther up-valley. A few miles on the bars took us to a valley fork, some six miles from the Homathko. Here we saw a great glacier in the right fork, with our objective between the glacier and upper Five Finger Creek. We thought the forks a good base. Since, we have given the names Royal Glacier and Pagoda Peak.

At daybreak we crossed a quarter of a mile of terminal moraine to the snout of the Royal Glacier. Well developed and high lateral moraine showed greater activity in earlier years. A big rock cliff and icefall, similar to that of the Parallel, blocked our route, but we managed a snow and rock climb on the right to by-pass this barrier. We hurried, being exposed to any falls off the huge

north walls of Hanging Peak. Fluted ice patches and hanging glaciers clung to the near-vertical walls for miles on either side of us. Soon we crossed a flat, crevassed section of the glacier and saw its source at a rim of rounded peaks. It was all of three miles in length and at its head fanned away in several directions. Royal Peak fed a huge icefall at the southeast corner. Pagoda crowned the high, serrated, sedimentary ridge to the north. The bulging south face had some overhangs, so we climbed a long diagonal slab to the ridge crest east of the summit. Slab rock, verglas and icy snow patches gave us no chance to relax vigilance. The whole massif is composed of westerly dipping sedimentary rocks, although Pagoda had numerous granitic outcrops. We expected a great drop on the north face, after what I had noted from the plane in June, but the reality of its sheerness was terrific. Even the tremendous north walls of Hanging Peak, and those of the Tiedemann chain, could not best the ice-patched face below. A narrow, jagged ridge rose above.

We changed to sneakers and left axes, to begin the final assault. Holds were generally sufficient, but untrustworthy. I led several rope lengths of both difficult and very exposed rock work. Finally, some granite pitches, although difficult, ensured success, as the holds were all sound. A succession of false summits, all difficult on their own, led to the apex. We estimated our height at 10,400 feet and noted Pagoda was the highest point between Razorback and the Homathko Forks. Hurriedly, as a stratus layer was rapidly converging from the north, we built a cairn, mapped and admired the scene. We saw scores of unknown glaciers, peaks and valleys. The walls of Reliance, Success, and Queen Bess seemed close to the south. In one view to the west we could spot every summit of the Cataract and Tiedemann chains and Waddington's crest also.

We were prompted to leave by a hail flurry. Long rappels quickly took us down the very difficult ridge. The intricacies of the slanting slab took time and much belaying. Lower down, we descended a heather spur, crossed crevasse mazes, and climbed down ice slopes to camp, finishing the 7000-foot descent at nine. On the 26th we returned to the raft-crossing in three hours, finding the travelling along the northwest bank of the river much faster. The next day we pushed across the swamps and bushy trail to the cabin of Pat, the trapper, half a mile north of Middle Lake; and on the 29th we finished the last 29 miles to Tatla Lake.

Legends of Mount Pilatus

J. Monroe Thorington

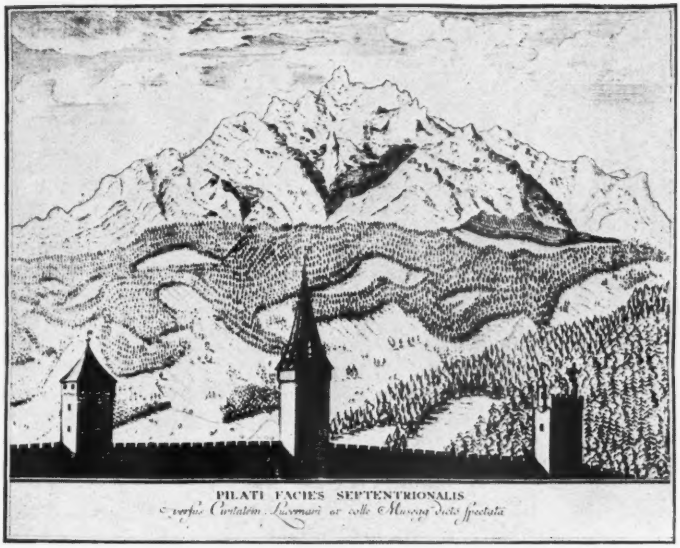
THE Spreuer bridge, with its 17th-century Dance of Death, spans the river Reuss at its entrance to the Lake of Lucerne. Across the lake rises the Rigi, the mountain of rock stripes, while above the ancient city towers the serrate crest of Mount Pilatus. It is a place of fabulous legend which the tide of modern travel cannot entirely dispel.

In 1421 Farmer Stemplin, of Neuenkirch, saw a dragon fly from the Rigi to Pilatus and let fall the dragon-stone, now said to be a meteorite and still to be seen in the natural history museum. In former days this stone had considerable reputation as a cure for many ailments, especially those in which hemorrhage was a symptom. All through the 15th and 16th centuries, such apparitions were noted, even by clerics and physicians; eye-witnesses reported dragons swimming under the Reuss bridges at least as often as they now report the Loch Ness monster—whose appearance seems to coincide with the beginning of each tourist season.

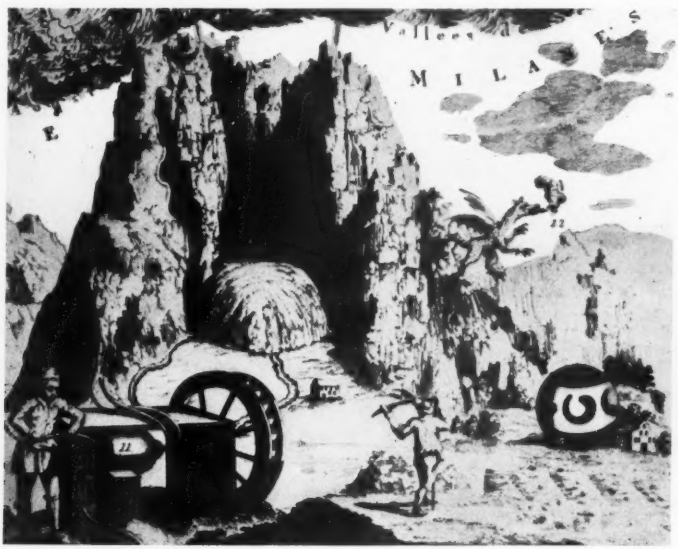
In ages even before dragons were known thereabouts, Pilatus was notable as a mountain of storms: ***Mons Pileatus,*** the cloud-gatherer. Such weather, accompanied by flood and ruin, arose particularly when the black tarn on the Oberalp was disturbed purposely by stones or other objects thrown into it.

No one has determined beyond question whether the dragon myth resulted from a discovery of prehistoric bones, or was an allegory of the ceaseless conflict between good and evil, or perhaps echoed some oriental tale spreading from the East. The connection, however, between tempest and water is well-known and widespread. Geysers can be brought into eruption if fatty substances such as soap or butter are thrown in; the surfaces of the Calendari lake in the Grisons, the dark lake on the Canatus peak in Spain, the Witches' Pool on the Faulhorn, the swamp of Tabe in the Pyrenees, are a few of many that boiled and foamed, or gave rise to hurricanes and hail, when they were intentionally broken.

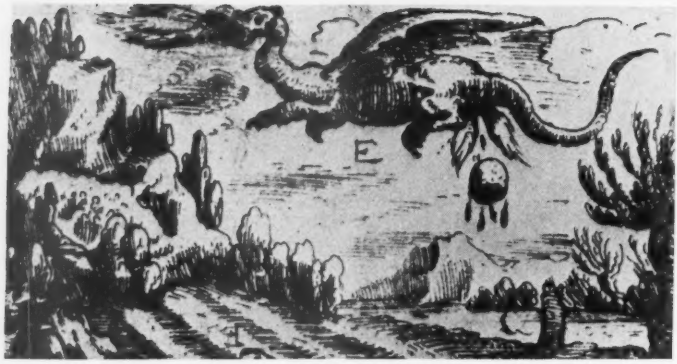
This is the background of the strange connection between



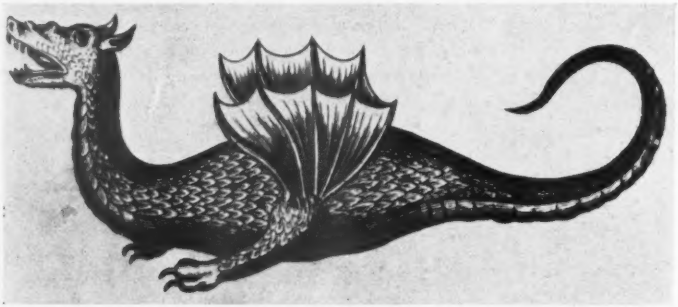
Mount Pilatus from the Walls of Lucerne
From M. A. Cappeller, *Pilati Montis Historia*, 1767



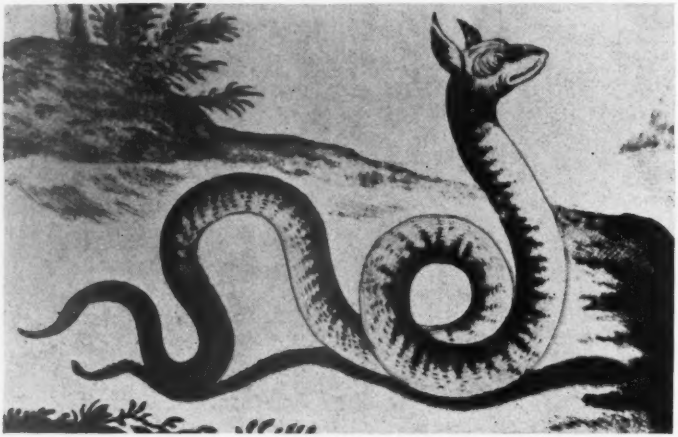
The Lucerne Dragon and The Dragon Stone
From the composite Alpine Landscape on Matthew Seutter's map
of the Valais, 1750



A dragon flying from the Rigi to Mount Pilatus dropped the miraculous stone still preserved at Lucerne (J. L. Cysat, *Beschreibung des Berühmten Lucerner Sees*, Lucerne, 1661)



"Draco Helveticus bipes et alatus" (A. Kircher, *Mundus Subterraneus*, 1619)



On 26 May 1499 this dragon was observed swimming from the Lake of Lucerne to the Reuss Bridge (J. J. Scheuchzer, *Itinera per Helvetiae Alpinas regiones*, Leyden, 1723)

Pontius Pilate and Mount Pilatus. Pilate is supposed to have committed suicide in Rome in 40 A.D. His body in the Tiber caused meteoric disturbance and is said to have been taken out and transported to the Rhone. In any case, about this time two Jewish patricians were banished to the Rhone Valley, one of them, named Archelaus, to Vienne. For some unknown reason, Archbishop Ado of Vienne (799-875) in his world chronicle confused this Archelaus with Pilate, and placed Pilate's banishment in Vienne. It is a firm tradition of that city that Pilate ended his life there, and the story became more widely known in the 15th century. As recently as 1775, a Roman pyramid was shown in Vienne as marking Pilate's grave; and in a near-by lakelet Pilate, clad in purple robes, was said to arise each year on Good Friday when the Passion was preached. Whoever dared or had the misfortune to look upon him would die within the year.

But Pilate did not rest in Vienne. His corpse, floating against the current, came to the Lake of Geneva; and violent gales at Lausanne led to transfer of the legend to this region, where it remained fixed between the 11th and 13th centuries. Crusades and pilgrimages spread the story abroad. In the year 1350, for example, there was in Rome a daily influx and exodus of 5000 persons. In that year the miraculous kerchief of St. Veronica was exhibited, and the surge of travellers across the St. Gotthard finally associated the Pilate legend with the Lucerne area.

The most mysterious and fearful spot on Mount Pilatus was the marshy pond of the Oberalp, connected with tempests which frequently arose near by. In 1387 six priests were punished for attempting to visit the place in defiance of a ban imposed by the Lucerne authorities. In 1518 Joachim von Watt (Vadianus), of St. Gallen, came to Lucerne from Vienna, where he had been teaching, to see the Pilatus lake. His companions were well-known humanists: Conrad Grebel, of Zürich, and Oswald Geisshüsler (Myconius) and Johann Zimmerman (Xylotectus), both of Lucerne. They left the city on horseback one August morning, gained the lake and returned to Lucerne that evening. Although they failed to see Pontius Pilate, and Vadianus thoroughly disbelieved the legend, the earnest entreaties of their peasant guide so impressed them that they did not make the conclusive test of troubling the water.

On 20 August 1555 the Zürich physician, Conrad Gesner, also

stood beside the Pilate lake after ascending a minor summit of the mountain; and in the summer of 1585 the city pastor of Lucerne, Johann Müller, led a procession of citizens to the fabled spot. A servant waded in the shallow water, stone after stone was thrown in, and Pilate was called upon to appear; but the assembled company was rewarded with nothing more than ripples for this adventurous hazard. The spell was broken.

The lake has long since dried up and vanished. Nothing is left save a meadow in the woods, and scarcely a traveller knows its story.

Safety in the Mountains

Report of the Safety Committee of the American Alpine Club 1949

THE mountain accidents of the climbing year 1948 surpassed in number those of 1947. In 1947 there were 15 persons killed or injured; in 1948 this number rose to 28. Although not all the accidents of the 1948 season can be described strictly as mountaineering accidents, they all throw emphasis again on the recommendations offered in last year's report.

It was pointed out last year that interest in mountaineering was increasing. This is still true. There is a large body of eager climbers who have not yet received sufficient training, and too often are fired with the romance of high conquest without appreciating the risks involved. The group needs and deserves guidance: it is a group that has contributed heavily to the toll, as the summaries of accidents will quickly show. Much of the preventive activity, therefore, should be directed at this large group of inexperienced and inadequately trained climbers. The first step, as recommended last year, is to encourage them to join an organized climbing group or club in which they can receive instruction and have a chance to gain experience under proper guidance. Second, literature and general information about the hazards of the various climbing areas should be made readily accessible to them. The National Park Service and U. S. Forest Service are aware of the need for information; and regional clubs, which should make efforts to reach all potential climbers in their areas, have generally undertaken likewise to act as disseminating agencies.

Last summer there was a great wave of accidents in the Alps. Many of the individuals concerned were English. Apparently the maintenance of monetary restrictions in Great Britain was one reason why so many English met with mishaps: aspiring climbers, unable to take sufficient funds out of the country, could not remain any length of time in the climbing districts, let alone afford guides.

With only a little time at their disposal, they took unusual risks in the effort to accomplish as much as possible. Further, since Great Britain has no truly Alpine heights, inexperienced climbers attempting the Alps without guides tended to overreach themselves.

The report presented herewith summarizes a number of safety programs now being carried forward by organizations throughout the country, and then reviews accidents which are known to have occurred in 1948.

MAYNARD M. MILLER, *Chairman*
OME DAIBER
BENJAMIN G. FERRIS, JR.
M. BECKETT HOWORTH
RICHARD M. LEONARD

SAFETY PROGRAMS

Pacific Northwest. The Mazamas have a rescue group organized to assist in emergencies in all mountainous areas. The Mountaineers, Inc. (Seattle, Everett and Tacoma) give annual training programs in elementary and intermediate climbing, both on rock and on ice, and in ski mountaineering. They have also a Safety Committee, which is responsible for the outlining and promotion of safe mountain practices. Together with the Washington Alpine Club and the regional section of the National Ski Patrol System, the Mountaineers sponsor the Mountain Rescue and Safety Council organized last year. This group functions in cooperation with, and sometimes at the request of, USAAF and USCG Search and Rescue and other local and national governmental services.

Sierra Nevada. For the Sierra Club, which is interested primarily in conservation, mountaineering activities are administered by a Mountaineering Committee, at present under the chairmanship of Morgan Harris. Local rock climbing committees conduct activities in the field. A subcommittee on safety plans an educational program and carefully investigates such accidents as do occur. Rescue techniques are practised on local cliffs, and latest developments discussed at evening meetings. A classification of climbers has been completed, for better control of safety, and a copy of the classification furnished to the National Park Service. For nearly ten years

an expert climber has been recommended to the Superintendent of Yosemite National Park as a temporary ranger during the height of the tourist season.

Rocky Mountains. Holding indoctrination in safety to be "of prime importance," the Colorado Mountain Club in 1948 repeated its "technical climbing school" (three evening lectures with a maximum attendance of 48 and three field trips with 38 in attendance) and continued the work of instruction, in so far as possible, on all climbing trips. In May 1949 a course of four weekly lectures, to be followed by week end and summer trips, drew a regular attendance of 80. The club has also (1) worked out a classification of scheduled trips and of intending participants; (2) published in *Trail and Timberline* a series of sketches, with running commentary, under the title "This Could Happen to You"; (3) held classes in first aid, including winter and mountain first aid, under the direction of a certified Red Cross instructor who is also a member of the club; (4) run qualification tests for skiers wishing to go on ski climbs; and (5) sponsored, jointly with the Red Cross, the National Ski Patrol System and the Southern Rocky Mountain Ski Association, two programs on avalanches and winter safety. This spring André Roch spoke to a group of members on the subject of avalanches.

The Kachinas, of Phoenix, Arizona, are ideally situated to attract young members and teach them to climb safely, since they were originally associated with the Boy Scouts. Not even the best of safety programs, however, can eliminate all possibility of human error. An accident involving a Kachina is summarized below.

Middle West. The Safety Committee of the Iowa Mountaineers reports that a clearly defined program was adopted in January 1949. Jointly with the State University of Iowa, the club is sponsoring a course in "Outings and Mountaineering" (two hours a week, for credit), with lectures and demonstrations supplemented by week-end practice climbing. In April 18 members completed an advanced Red Cross course which stressed particularly the problems of mountaineers and skiers. The club intends to schedule a greater number of outings for practice climbs, and to sponsor a "school of mountaineering" on the annual summer outing. All leaders and

guides on club outings must be approved by the Safety Committee.

The Chicago Mountaineering Club held a special meeting on 1 October 1948 to discuss safety and training. Six classes were held between that date and the end of May 1949.

East. The Appalachian Mountain Club is in the process of organizing courses and talks on mountaineering problems. It is expected that rock climbing, and the special rescue problems involved, will receive particular attention.

The Potomac Appalachian Trail Club has initiated a series of talks and articles on safety. A number of members who work in governmental laboratories, and who assisted in tests for the Army during the war, have continued to be interested in testing equipment and techniques. It is reported that one member, an electrical engineer, has undertaken a study of electric storms and the best methods of protection. In view of the disastrous accident on Bugaboo Spire last summer, this is decidedly pertinent.

National. The National Park Service has been keenly aware of the dangers to be encountered in the mountains, especially after the accidents in the Tetons last summer. Various suggestions have been offered: (1) trail markers to warn climbers of hazards ahead and inform them of the equipment they should have, and (2) pamphlets or bulletins, to be distributed in the Parks where climbing is carried on, with data on requirements and conditions. In September 1948 the National Park Service sponsored the Mountain Climbing and Rescue Training School at Mount Rainier National Park.* It is hoped that the school will be held again in 1950. Since this training is intended primarily for Park personnel, and since accommodations are limited, only a few outsiders can be invited; but an outline of the course, if it were made available, would undoubtedly be of great interest and value to local climbing organizations.

ACCIDENTS IN 1948

Alaska: Mt. Juneau. On 14 May 1948 Ralph E. Mott, a sailor on shore leave, without adequate training or equipment, became sep-

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* For the report by Dee Molenaar, see *A.A.J.*, VII (Jan. 1949), 222-3.—*Ed.*

arated from his five companions on Mt. Juneau and, descending alone, apparently slipped. He perished on the upper snow slopes. The search and rescue operation occupied 75 men for ten days.

Sources of information: local reports, and U. S. Forest Service.

Analysis. So little is known that only the obvious general comments can be made: inexperienced—ill-equipped—alone.

Purcell Range, British Columbia: Bugaboo Spire. On 4 August 1948 a party of four climbers, Rudolph Pundt, Robert Becker, Ann Strong and Ian MacKinlay, reached the summit of Bugaboo Spire. They were members of a large group of Sierra Club and Stanford Alpine Club climbers who had joined forces for an informal two-week trip. On the descent they were struck by a severe thunderstorm. Only a few hundred feet below the summit, they sought shelter in a small cave below the crest of the ridge, and unroped. Shortly afterwards, a bolt of lightning struck near them, and all lost consciousness. MacKinlay, the first to revive, saw Pundt writhing at the edge of the ledge. Before MacKinlay could reach him, Pundt slipped over the edge and fell approximately 1000 feet. Miss Strong soon regained consciousness, and Becker partially regained it. He was paralyzed from the waist down, but the other two, though severely burned and shaken, were able to move. Since in their condition it was impossible for MacKinlay and Miss Strong to bring Becker down unaided, they tied him to the rock, left extra clothing and their entire food supply, and descended to the valley, where they reported the accident to the rest of the group. They were themselves taken out to the hospital at Cranbrook.

Strong rescue parties were driven back by the continuing bad weather, with snow; and it was not until the 7th that a party was able to reach Becker. He was dead, in exactly the position in which he had been left, with the food and supplies untouched. On being released from the rope, the body slipped over the edge. It was therefore impossible to ascertain the precise cause of death. Doubtless it was a combination of initial burns and secondary shock. Both Miss Strong and MacKinlay recovered, but only after several weeks' hospitalization. Treatment of their second- and third-degree burns included skin-grafting.

Sources of information: Report of the Mountaineering Committee, Sierra Club, and newspaper accounts.

Analysis. This accident seems to have fallen within the limits of risk normally accepted in mountaineering. (Two children were killed by lightning on the same day in Oklahoma, in an open field.) Most climbers have developed a healthy respect for lightning; but the history of lightning accidents, even on high peaks, has been such that shelter below the crest of a ridge has generally been considered adequate protection. The tragedy suggests the need for fuller investigation of the lightning hazard to climbers, especially in regions where electrical storms are frequent and severe.*

Northern Cascades, Washington: (1) Mt. Shuksan. On 7 August 1948 R. Koenig (18), K. Barr and a companion, returning from a climb of Mt. Shuksan, were at the bottom of Fisher's Chimney. They were standing on a small snow field, planning a climb of Mt. Baker for the next week end. Without thinking, Koenig stepped backwards and broke through the snow where it had thawed too thin from the underside—an area of danger previously recognized. He fell about six feet, and fractured both bones of one leg.

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* We are indebted to Philip C. Bettler, who was a member of the party, for supplementary observations: "This was an accident which could not have been foreseen or avoided by the climbers . . . The first-aid equipment carried on the trip was very complete, and certainly indispensable. Besides the usual items to be found in such a kit, we had morphine tablets, Nembutol tablets, sulphadiazine and penicillin. Both Cricket [Miss Strong] and Ian had second- and third-degree burns, so painful that the sedatives were required to enable them to rest. The sulphadiazine was used to help prevent infection of the open wounds. The doctor at Cranbrook commended John Thune [in charge of first aid] on his care of the patients. [The injured were able to travel down to the roadhead on August 7th; they reached Spillimacheen by truck early on the 9th.]

"The storm struck with a sudden fury that could not be anticipated. The climbers sought refuge as far down the ridge as they could get in the time allotted them. It seems almost certain that they were not struck by a direct bolt, but rather intercepted ground currents resulting from a stroke higher up. The burns were confined to backs, hips and legs, and paths between. These were the places where they were probably touching the rock or each other. From an analysis of ground current effects, one may conclude that it is best to get away from vertical faces where one might be touching the rock with the upper part of the body as well as the lower, and to crouch in such a way as to maintain only one point of contact with the rock. For a more complete discussion of this problem, see J. Wilson and R. Hansen, 'Lightning and the Mountain,' *Sierra Club Bulletin* (1949)."

Cf. R. Hansen, "They Climbed to Their Death," *Saturday Evening Post*, 14 May 1949, pp. 38-9, 142, 144-6, 148.—*Ed.*

Sources of information: newspaper account, and local information.

Analysis. Apart from the act of stepping inadvertently on a place already recognized as dangerous, no climbing tactics were involved. The men were seasoned employees of the USFS, considered safe and reliable mountain men. The accident further demonstrates the need for constant alertness, even in the best of climbers.

Northern Cascades, Washington: (2) Mt. Rainier. A dual accident occurred on Mt. Rainier in the early summer of 1948. J. H. Hagood was crossing a six-foot snow bridge, which collapsed. He was precipitated into the crevasse and buried under snow. He was unconscious when he was rescued, three or four minutes later, but promptly regained consciousness. Apparently at this time, one of the rescuers (M. Gilber, a member of the climbing party) slipped into a crevasse and suffered a broken ankle. He also was rescued by other members of the party, and returned to a hospital. A summer blizzard was in full swing at the time.

Source of information: newspaper account.

Analysis. The single newspaper account is vague and incomplete. Gilber is said to have fallen 200 feet (!) into a crevasse, but there is no mention of a rope. The exact location is not known, nor is it known whether the mishaps occurred on an ascent or on a descent. All in all, they would seem to have been the result of inadequate training.

Northern Cascades, Washington: (3) Mt. St. Helens. On 10 August 1948 L. W. Taylor (55) and two companions were climbing without rope on Mt. St. Helens. Taylor slipped and slid about 200 feet, and then fell 50 feet into a crevasse, where he was killed.

Source of information: newspaper account.

Analysis. This again appears to be a case of persons attempting a climb beyond their capacities. Lack of detailed information concerning the circumstances makes further comment unwarranted.

Olympics, Washington: (1) Mt. Anderson. On 4 September 1948 a party of five, including Ronald Nece (21), hiked into the Olympics from the Dosewallips Ranger Station to the Anderson Pass shelter. On the 5th the party crossed Anderson Glacier and

Flypaper Pass, to approach Mt. Anderson. Observing the time, the party decided that it would be unwise to attempt the ascent and therefore returned over Flypaper Pass, at about 3.00 P.M. Nece and McMillan descended by the snow finger, while the other three descended by the rocks. Nece had gone down only about ten feet when he realized that he was in a dangerous spot. Attempting to retrace his steps, he lost his footing and slid about 100 feet down the snow and off into the 20-foot crevasse between the snow finger and the rocks. He suffered severe lacerations and a broken kneecap. Two of the party remained with him, and the other two set out for help. A rescue party was formed, and the rescue was safely effected on the 6th.

Source of information: newspaper accounts.

Analysis. This accident appears to have been the result of a temporary lapse in the judgment of one man's capacity, and of inability to correct the error soon enough. The party as a whole certainly had shown good judgment in postponing their climb.

Olympics, Washington: (2) South Brother. On 2 October 1948 a party of Bremerton High School students went into the Brothers Peaks. On the 3rd some of them attempted the South Peak, but most turned back a short distance from the summit because of rain and fatigue. Two decided to go on to the top, which they believed to be not far distant. These were Robert Thorson (17) and Jerry Heacock. Heavy fog and rain made visibility poor, and the two lost their way, but the survivor thought they reached the summit. Having failed to regain contact with the others, they spent the night on the mountain. At daybreak they started down, still off the regular route; and about 500 feet below the summit Thorson slipped and fell headfirst some 50 feet or more. He was instantly killed. A large rescue party reached the body 24 hours after the accident and, 20 hours later, returned it to the road.

Sources of information: newspaper accounts, and reports from members of the rescue party.

Analysis. A case that emphasizes the need for proper education and some supervised training of prospective enthusiastic climbers. The youths were unroped and poorly equipped—Thorson's boots had only two or three Tricounis and a few loose hobs. The area in which the accident occurred is described by one of the

rescuers as a series of cliffs and ledges joined by chimneys or gullies. The party separated below the summit, in rain and fog. Certainly, in deciding to wait for daybreak before descending, Thorson and Heacock did show good judgment.

Southern Cascades, Oregon: Applegate Peak (Crater Lake National Park). On 6 August 1948 George M. Roest (18), a concessioner's employee, off duty, fell to his death while climbing alone on Applegate Peak. Apparently he planned to skirt the peak, but either misunderstood or disregarded instructions.

Source of information: National Park Service.

Analysis. From the meager data, only the most general conclusions can be drawn: here was a lone climber of (apparently) little experience—not enough, anyhow, to know how to make use of instructions.

Sierra Nevada, California: (1) Half Dome (Yosemite National Park). On 19 June 1948 Chalmer J. Groff (19) and a friend, both National Park Service employees, off duty, were descending below the face of Half Dome, in sneakers. Groff slipped on a mossy rock and fell, almost striking his companion. He continued to fall—70 feet over rough boulder terrain—and was instantly killed. The party was inexperienced and without a rope. The climb was classified by the Sierra Club as Class 3.

Source of information: National Park Service.

Analysis. Again, heavy payment for inexperience—and it might have been even heavier, since Groff's companion narrowly missed being knocked off the cliff by Groff's fall. But it should be pointed out that such an accident might happen even to the most experienced, and emphasized that one must always be on the alert to danger, even on the easiest and simplest climbs—especially descents.

Sierra Nevada, California: (2) Half Dome (Yosemite National Park). On 15 September 1948 Paul H. Garinger (30-35) was seen descending the cable on Half Dome. He stopped and appeared to be ill. Seconds later, he disappeared. It is thought that he fainted and then fell to his death.

The most severe forest fire in the history of the Park drew experienced personnel away, and thus hampered rescue operations. Recovery of the body was accomplished several days later by a small

Sierra Club party, including Al Baxter, who had himself been rescued in a serious Yosemite accident the year before. Severe skull fracture indicated instant death.

Sources of information: National Park Service, and Sierra Club.

Analysis. The route is protected by two heavy steel cables as handrails, waist-high for 800 feet on smooth 43-degree granite slabs. It is intended for use by totally inexperienced persons. This was the first such accident in thousands of ascents since the cables were installed in 1919; it could have been caused by mountain sickness brought on by dehydration and overexertion on the rapid climb of 5000 vertical feet.

Sierra Nevada, California: (3) Mt. Humphrey. A party of five, having climbed Mt. Humphrey and descended from the summit area, were taking off the rope at the top of a scree chimney. Harry Abraham (27), leader of the party, was coiling the rope; others were above. He had instructed the others not to move. Someone dislodged a rock which, in turn, dislodged another rock. Abraham was unable to dodge both rocks, and one of them struck him. Knocked off balance, he tumbled some 50 feet, sustaining moderately severe lacerations and contusions about the head. This accident occurred on 17 August 1948.

Sources of information: newspaper accounts, and personal account from Abraham.

Analysis. This mishap emphasizes again the need for caution when a party is on loose rock. Extreme care must be taken to prevent dislodgement of rocks.

Near Tucson, Arizona. On 9 August 1948 John D. Anderson, a sheriff's deputy, was assisting in the rescue of a 15-year-old boy who had become isolated on a cliff face the day before. Anderson had been lowered 500 feet down the 1000-foot cliff to the place where the boy was trapped. He then tied the rope around the boy; but, as the two were hoisted upward, he himself merely held onto the rope. About ten feet from the top, Anderson lost his grip and fell 1000 feet. He was instantly killed.

Source of information: newspaper account.

Analysis. This accident was the result of faulty rescue technique. Both persons should certainly have been tied to the rope, or else

there should have been two trips or two ropes. The report failed to state whether Anderson had been tied in on the downward trip. Fatigue probably was an important factor in the loss of his grip on the ascent.

Rocky Mountains of Colorado: (1) Pikes Peak. On 24 July 1948 James Slack (20), a medical student at the University of Oklahoma, left Colorado Springs for a solo climb up Pikes Peak. He had been warned against the undertaking by the friends with whom he was staying, since he was inexperienced and poorly equipped. He is reported to have been wearing only a T-shirt and Army trousers for protection, and to have had very little food. When he failed to reappear the next day, search parties were organized by Scouts, 38th Regimental Combat Team troops and the sheriff's office. On the 28th he was found dead, with a fractured skull, some distance below the summit. It was believed that he had lost his footing on some slabs and fallen 15-20 feet.

Sources of information: newspaper accounts, and Colorado Mountain Club reports.

Analysis. Another proof that a mountain is no place for a climber to be alone—especially if he lacks experience. What caused the slip will never be known, but the elements of tragedy were already present when the young man set out to climb a big mountain alone, poorly equipped, without mountain experience, and against the advice of friends. The spirit which urges men to try unknowns will, we hope, never die. But obviously more educational work, by mountaineering organizations, is needed to persuade prospective young climbers not to aim too high.

Rocky Mountains of Colorado: (2) The Flatirons (near Boulder). On 10 October 1948 a group of students from the University of Colorado climbed to the top of the first Flatiron by a short, easy route up the back. Two of them then decided to descend by the face, a tremendous slab that slopes at about 45 degrees. Climbing on this formation is primarily friction work. Abrupt endings of strata in the section which the boys chose to descend form several short but often impassable overhangs on the downhill side. The climbers had no knowledge of the route, and almost no climbing experience—as is indicated by the fact that one of them

was wearing leather-soled shoes with steel heel-plates. The other, who was killed, was wearing composition soles.

At a point about 150 feet from the top, John Hawkins, who was descending first, slipped a short distance. Alarmed, he told his companion, Robert Pankey, who was about 25 feet higher, to stay where he was. A few seconds later, Pankey slipped and fell some 500 vertical feet down the slanting rock. Hawkins, unable to see the base of the rock, continued down the face until he was able to progress no further. A county park policeman witnessed the fall and summoned help. Rescue was effected by the Rocky Mountain Rescue Group, a volunteer organization. Apparently Pankey had been killed almost instantly. Newspapers stated that nearly every bone in his body had been broken.

Sources of information: members of the rescue party, Colorado Mountain Club report (Safety Committee), and newspaper accounts.

Analysis. Lack of equipment, and lack of experience. There was no rope in the party; but if there had been one, and if the boys had been tied in, the fall would very likely have been fatal to both. They were both freshmen at the University, 17 years of age. Probably they had been attracted by the notoriety of the Flatirons and encouraged by their success on the rather spectacular but easy climbing on the back. The Flatirons seem particularly deceptive for beginners: seven fatalities have occurred on them.

The case points up the extreme importance of educational work—of instruction in basic mountaineering—by local climbing groups. The Colorado Mountain Club has, in fact, carried on classes. While it must always be expected that some individuals will remain uninfluenced, this seems to be the only effective means whereby ambitious but inexperienced young climbers can be led to an understanding of proper techniques.

Rocky Mountains of Colorado: (3) Kreuger Rock (near Estes Park). On 31 July 1948 Donald and Ralph Vodicka (15 and 17) were climbing on a rock spire called Kreuger Rock, near Estes Park. This pinnacle is easily climbed on one side; on the others, it drops off precipitously. The two boys ascended by the easy route and then attempted a descent by one of the steep faces. They had no equipment, and they were decidedly inexperienced. Donald slipped and, unable to arrest himself, fell a short distance. The older boy tried

to reach him. Before he could, Donald lost his hold and fell 150 feet. He was instantly killed. Ralph returned to the top and descended to his brother's body by the easy route.

Sources of information: newspaper accounts, and National Park Service (Rocky Mountain National Park).

Analysis. Young, inexperienced, untrained climbers, they went up by the easy way—and tried something more exciting on the way down. Again one is driven to emphasize the need for instruction.

Rocky Mountains of Colorado: (4) Longs Peak. On 17 July 1948 B. B. Van Diver (21) and William Eubank (20) were attempting to climb the east face of Longs Peak by the Stettner Ledges. At some spot near the top of the ledges, Van Diver, who had taken a 20-foot lead beyond his last piton, slipped and fell. Eubank, who had secured himself to a piton, applied the principle of the "dynamic belay" and thus was able to arrest Van Diver's 40-foot fall. Despite the "dynamic belay," however, he was pulled tightly against his own belay piton. Van Diver suffered a head laceration and mild concussion. The excellent rescue team of the Rocky Mountain National Park effected a prompt rescue, and further injury and shock were avoided.

Sources of information: newspaper accounts, and Colorado Mountain Club reports.

Analysis. The exact cause of the slip is unknown. Still, the accident does demonstrate two important points. First, on difficult and exposed rock, a lead of 20 feet is too great, since a fall would be likely to cover double the distance and its force would be increased by acceleration. Second, good grounding in proper techniques of belaying can do much to avert disaster. The minimizing of injury in this case speaks well for the training of the climbers.

Tetons, Wyoming: (1) Nez Perce. On 5 July 1948 Winthrop Akin and Ben Pedrick, members of the Kachina Mountain Club, of Phoenix, Arizona, climbed Nez Perce from Jenny Lake by the usual route (west ridge and north face). They reached the summit at 12.45 P.M. While Pedrick was signing the register, Akin unroped and moved south of him, in order to take a photograph. While he was getting into position, he stepped on a large, loose rock on the edge. It tipped, or slid under his weight, and precipitated him into

space. He fell approximately 80 feet, and on the way his head struck a projection with such force that he was instantly killed. After hitting solid ground, his body rolled for some distance. Pedrick climbed down and ascertained that Akin was dead. He then regained the summit and, in three hours, descended to Jenny Lake, where he reported the accident. Akin was 20 years old.

A recovery party under John de la Montagne left Jenny Lake at 4.00 A.M. on July 6th, located the body at 2.00 P.M., wrapped it in canvas, and raised it to the summit. A crew of eight and a relief crew of three lowered it thence to Garnet Canyon. It was then transported in a Stokes stretcher by horse to Jenny Lake, which was reached at 1.00 A.M. on the 7th.

Sources of information: National Park Service report, and letter from the president of the Kachina Mountain Club.

Analysis. No place on a steep mountain can be considered safe. Ordinary precautions are as necessary on the summit as elsewhere. The Kachinas are known to have paid a great deal of attention to proper training and safety in their local climbs, but unfortunately this is no permanent and sure preventive against human error.

The efficiency of the recovery team deserves special mention: it was due to forethought and to advance planning and training by the Park staff—a good example of what can be done in mountain areas by the Park organization. Also, the party lowering the body saved much time and effort by following the fall line throughout.

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Tetons, Wyoming: (2) Nez Perce. Facts concerning another accident on Nez Perce are obscure. A rock dislodged by a climber above nearly severed a finger of a woman below. No special evacuation was necessary: the injured woman was helped down the mountain by her own party.

Source of information: conversation with individuals in the Tetons at the time of the accident.

Analysis. The data are so sparse that no complete analysis can be made. It can be said again, however, that leaders and others are responsible for those climbing below them, and that everyone must be extremely careful on loose rock. The excellence of the rock on many of the peaks in the Tetons should not be taken as eliminating the need for caution on others where the rock is more broken, *e.g.* on the upper slopes of Nez Perce.

Tetons, Wyoming: (3) Middle Teton. On 21 July 1948 a party of five from the Chicago Mountaineering Club, led by Paul Stettner and including also Mary Casebeer, John Farr, William Primak and Arthur Tielsch, left Garnet Canyon on their first day of climbing from high camp to try to find a new route on the north ridge of the Middle Teton via the lower saddle. They reached the summit early in the evening and descended by the south couloir to the saddle between the South and Middle Tetons. On this part of the descent, they lost their way; and they had to continue by moonlight. Not far below the saddle, the party unroped, because it was felt that the going would be easy; and Stettner led downward in a traverse of the upper tongue of a steep convex snow field that extends in a drop-off into the walls of the south fork of Garnet Canyon. The angle was estimated at about 30 degrees.

Mary Casebeer wore Bramani-type boots; Farr, Army combat boots with smooth soles and heels; the rest of the party, heavy leather boots nailed with Tricounis and hobs. There was one ice-axe in the party. In the descent they joined hands and proceeded diagonally downward, apparently intending to hit the point where the snow field narrows and to follow its crest along the rocks. About 80 feet short of the narrowing of the snow field, one member slipped and knocked Farr and Tielsch off their feet. Apparently the handhold between Farr and Tielsch was broken, and Tielsch slid down on his back. He slid about 300 feet, out of control, to a point where the snow field steepened to about 45 degrees, and then on for another 300 feet into a pile of scree. He was found shortly thereafter, dead, 40 feet below the snow.

After the accident the party roped and moved to safety along the upper edge of the snow field. When it had been ascertained that Tielsch was dead, Primak was sent down alone to summon help while the others of the party rested and awaited dawn. Primak reached headquarters at 7.30 A.M. on July 22nd. Park authorities and members of the Chicago Mountaineering Club packed equipment and reached the body at 4.00 P.M. Evacuation to the campsite in Garnet Canyon was accomplished by Stokes stretcher and a six-man carry. From there a horse-borne stretcher with special cargo saddle was used as far as the road at Lupine Meadows.

Sources of information: National Park Service report, and Chicago Mountaineering Club report.

Analysis. This accident resulted from a combination of fatigue, night climbing and failure to observe basic precautions on steep snow slopes. After a long day of climbing (especially if it be the first high climbing of the season), one must be careful not to underestimate the effects of fatigue on a party's physical strength and on its judgment. It is well known that fatigue, plus a desire to escape the discomforts of an enforced bivouac, can lead even experienced climbers to far exceed the reasonable margin of safety *without being aware of it.* Moreover, the hazards of nighttime descent by an uncertain route on steep frozen snow are such as to suggest at least the careful use of rope and ice-axe—there was rope for all, and Primak had the axe—or the finding of another, less dangerous route. Since the party was under the leadership of a climber of some experience, one can only conclude that fatigue and the desire to get his party off the mountain at all costs must have obscured his recognition of the very real hazards to which he was exposing it.

Tetons, Wyoming: (4) Teewinot. Early on 7 August 1948 Dean and Lawrence Worth left Lupine Meadows to climb Teewinot. They had a good out-of-doors background, but little "alpine" experience. They had done a little work with the ice-axe on practice slopes, and Dean had undergone some training in New England with the Dartmouth Outing Club.

They reached the col between the two summits, but decided not to attempt the steep wall to the main summit. In the late afternoon they descended, coming from the steep, rocky upper slopes to the top of a steep snow field extending about 300 yards and terminating in a talus pile. They were in sneakers, and Dean had the only ice-axe. At the snow field they unroped, and Dean started across it with his brother holding onto his belt. A slip occurred, and both went sliding down the slope, head over heels, unable to check themselves. Eventually they smashed into a large rock near the bottom, and finally they came to rest on the talus. Lawrence had a severe compound fracture of the left leg, and Dean was cut up about the face. This was at 5.30 P.M. Dean left Lawrence with as much clothing as possible and made his way to Park headquarters, where he reported the accident at 7.30 P.M.

As after other accidents in the Park, rescue plans previously perfected were at once put into operation. An advance party was

on the way shortly after 8.00 P.M., carrying morphine, penicillin, plasma, splints and sleeping bag. It arrived at the scene about 10.30 P.M. and, after first aid had been administered by Dr. John Holyoke, prepared the patient for removal. The main party, consisting of nine Park employes, arrived an hour later with a Stokes stretcher and commenced evacuation. A six-man crew, with reliefs, was used; route-finders were sent ahead. A heavy blowdown in Avalanche Canyon delayed the rescue, and it was not until 4.20 A.M. on the 8th that the carry was completed and the patient transferred to a waiting Park Service truck, which took him to Jackson.

Source of information: National Park Service report.

Analysis. Here is an example of ignorance of the hazards to be encountered on steep snow slopes, especially in the afternoon when they begin to harden. It may be natural for inexperienced climbers to regard the lower snow slopes of a mountain as offering no peril because they seem inconsiderable in comparison with the upper slopes. The brothers in this case so far disregarded the danger that they took off the rope before they started across the slope—despite the fact that they were both in sneakers and had only one ice-axe. They certainly had showed good judgment in deciding not to attempt the summit, but apparently they did not realize that a slip on steep, hard snow can produce just about the same effect as a free fall, and that under these conditions sneakers are most dangerous footgear.

Near Rollins Springs, Missouri. On 14 October 1948, 30 staff members of the *Savitar*, a University of Missouri student publication, were picnicking near Hinkson Creek. Richard K. Phelps, Jr. (20), attempted to climb a bluff near the creek. When a rock to which he was holding gave way, he fell backwards from a height of about 15 feet. He succumbed to head injuries without regaining consciousness.

Source of information: local information.

Analysis. Phelps was an enthusiastic potential climber: "he read extensively and longed to climb mountains, but he had never had the opportunity. The case is one of tragically undirected enthusiasm.

Appalachian Mountains: (1) Mt. Katahdin. On 4 July 1948 Albertine Parker (about 25), a member of a large party, fell while

she was trying to pass the first (lowest) chockstone in the Chimney route on Mt. Katahdin. She sustained a badly fractured left ankle and lacerations about the face and arms. The party, which was apparently not very experienced, was not using a rope. Rescuers were hampered by a large and treacherous snow field, which they avoided, and below it by boulders and bushes. Evacuation was completed six hours after the accident.

Sources of information: Appalachia, XXVII (December 1948), 240; and letter from H. J. Dyer, Supervisor of Baxter State Park.

Analysis. The Chimney route on Katahdin, though not extremely difficult, is yet difficult enough to warrant the conclusion that only experienced persons should attempt it. This was a case of an inadequately prepared person attempting something beyond her ability.

Appalachian Mountains: (2) Mt. Katahdin. On 4 September 1948 Mary Rossbach (25-30) was climbing with her husband on Mt. Katahdin. They had climbed to Baxter Peak from the Chimney Pond Campground and had crossed the Knife Edge to Chimney Peak. In the descent of Chimney Peak, a simple scramble, Mrs. Rossbach fell into Chimney Notch. She had been in an insecure stance where she had only one foothold and practically no handholds. She was knocked unconscious and suffered a severe scalp laceration. Another climbing party was in the vicinity, and two of its members remained with the Rossbachs while the third went down to notify the Park Ranger.

Much confusion ensued, for the accident was reported as having occurred at the base of the Chimney. Finding no signs of trouble there, the Ranger realized that the accident had been somewhere up on the mountain. The party was finally located in Chimney Notch at dusk. Mrs. Rossbach had regained consciousness, but was dazed. She was made comfortable, and supplies were brought up that night. In the morning she was assisted down the Dudley Trail, and arrived at the campground that night.

Sources of information: Appalachia, XXVII (December 1948), 240-41; and letter from H. J. Dyer, Supervisor of Baxter State Park.

Analysis. Reports indicate that Mrs. Rossbach's climbing experience had been extremely limited, even for "a simple scramble." Also, she has been described as a "large, heavy woman" and in

poor physical condition. It would seem, therefore, that fatigue was a significant factor, and that the mountain had been underestimated and the climber's abilities overestimated.

CONCLUSION

Study of this report reveals an increase in the proportion of accidents involving climbers of little or no experience and without experienced companions. Of the 28 climbing accidents in 1948 on which data were available, 20 resulted directly from ignorance of mountain problems and hazards. Most of the cases involved young persons who ventured onto cliffs or high mountainous terrain without recognizing fundamental dangers and how to deal with them. Acting independently, without guidance, they invited tragedy. One can not but conjecture that there were hundreds of similar situations in which the elements of tragedy were present but—by good luck—suppressed.

We can expect that mountains will always attract the adventurous. Often these are individuals who are impatient under instruction and control, and prefer to teach themselves—"to learn on their own." Many of today's and yesterday's great climbers started thus. There are today, however, mountaineering organizations that make a point of encouraging novices and would-be climbers to benefit by the skill and judgment already won by older members. Climbing instruction—some of a very high order—is available in all but a few mountain areas. The efforts of the regional mountaineering clubs to teach safe and sound techniques have been, indeed, of enormous value; and further expansion in this field offers one of the brightest hopes for a reduction in the number of future accidents. Here is the most important single contribution that the clubs can make to American mountaineering, and one worthy of their best efforts.

The American Alpine Club, working through the safety representatives of mountaineering clubs and interested government agencies, can do much, we believe, in calling attention to mountain dangers and in helping to develop principles of safety. But our main reliance must be on the regional clubs: they, and they alone, are in close contact with the young climbers and able to start them out right in their home territories.

How to instruct the would-be climbers is of course not the only problem. Eight accidents—the one on Bugaboo Spire constituting a possible exception—resulted from carelessness or errors of judgment on the part of climbers having more than a novice's experience. No mere listing of do's and don't's is of much value here. The lesson is that constant care and attention are essential in the mountains at all times, and that the responsibilities of leadership call for extraordinary amounts of both, plus a degree of judgment representing far more than technical ability.

There are few of us, surely, who can not look back to errors and mistakes in judgment similar to those reported here. That ours did not develop into accidents should make us not more critical of those who have suffered, but more critical of ourselves and of our own climbing. There are few of us indeed who can afford not to learn from others' mishaps.

The American Alpine Club as an Auxiliary in Glacial Research

RICHARD FOSTER FLINT

[It is a pleasure to reprint the address which Professor Flint, Professor of Geology at Yale and Vice-Chairman of the Arctic Institute of North America, delivered at a meeting last January.—*Ed.*]

MEMBERS of the American Alpine Club have the ability to perform a very useful service in research in glacial geology, and at the same time to add to the interest and significance of their climbing expeditions.

Most people have an exaggerated idea of the extent of knowledge of the glacial geology of the world's mountains—even the mountains of North America. Actually there are big blank spaces in our knowledge of these things. The more remote the mountains, the bigger the blank. Many would be surprised to learn that even in so readily accessible a highland as the Adirondack Mountains we are in need of certain specific information that any intelligent person, properly briefed, could gather.

Alpine Club members get to the more remote mountain areas, the high places difficult of access, more often than do geologists. Glacial geologists, especially, are few in number—there are hardly more than 50 in the United States—and the regional scope of their research activities is therefore limited. Most of them (myself included, for the time being) are spending their efforts in plains country, which is no doubt the very last field in which the American Alpine Club would be interested. As a result, most mountain areas are untouched or rarely visited by professionals.

This situation offers an open door to climbers who have an interest in science as well as in climbing. Although not trained as geologists, members of the Club have all the other qualities it takes to bring in valuable information. They are people of superior education and superior intellect, accustomed to outdoor life, trained in observation, and handy with simple instruments. With this combination of qualities, they can make a lasting contribution to the

science of glacial geology, if only they are briefed on what to look for.

The synthesis for which observational data are needed is this: Glacial geologists are trying to reconstruct a picture of the extent and character of the great glaciers of the former ice ages. These glaciers, when at their greatest extent, covered more than 30% of the land area of the world. Nearly all the glaciers originated in mountains. We are trying to identify their mountain sources and the directions in which they flowed.

This requires the compilation of a vast amount of very detailed information. A first approximation to such a compilation is the Glacial Map of North America, put together by a committee of geologists appointed by the National Research Council. The compilation represents contributions from hundreds of individuals, by no means all of whom were geologists. Five hundred individual contributions have much more than 500 times the value of a single contribution, because each makes all the others more significant.

The Glacial Map of North America was published in 1945 and is distributed by the Geological Society of America, 419 West 117th Street, New York 27, N. Y. A second, revised edition is contemplated, and more information is needed in order to make it as nearly complete as possible.

Specifically, we want at least six kinds of information:

1. The directions of flow of the former glaciers, determined by
   a. Stoss-and-lee topography in hillocks or bosses of bedrock,
   b. Striations and grooves.

   The azimuth direction of flow should be determined as accurately as possible, with a compass. It should be noted whether the direction is measured from magnetic north or from true north.
2. The lower or outer limit of glaciation.

   This is determined at the place where glacial features (U-valleys, hanging tributaries, polished bedrock surfaces) end, and where normal valleys and tributaries, and weathered bedrock surfaces, begin.
3. The vertical upper limit of glaciation in a valley.

   This makes it possible to determine the approximate thickness of the former ice.

4. Fluctuations in former glaciers caused by climatic changes, determined by
   a. End moraines, lateral moraines,
   b. Sections of deposits exposed in stream banks and other places,

      showing $\frac{\text{till}}{\text{outwash}}$ or $\frac{\text{fresh till}}{\text{decomposed, rusty till}}$

      $\frac{\text{till}}{\text{}}$

5. The altitude of former regional snowline.

   This has valuable climatic implications, and is determined by obtaining the altitudes of floors of cirques (where no good topographic maps exist, from which altitudes can be measured directly).

6. Any unusual occurrence, such as pieces of trees above present timberline, imbedded in glacier ice or in glacial drift.

   Such evidence shows that timberline was formerly at a higher altitude, probably during an interglacial warm climate.

To get all this information you need only *four things*: (1) a sharp eye, (2) a base map, (3) a compass, (4) an aneroid barometer or an altimeter.

By way of general advice, I should make these suggestions:

1. Plot all locations on a map, as accurately as possible, and estimate and note down the probable degree of accuracy.
2. Write descriptive notes on the spot, to supplement the map.
3. Wherever possible, take photographs of the glacial features observed, noting the exact location and direction of view of each. In photographs of small features, include some familiar object that will serve as a scale.
4. Take samples wherever samples may be helpful, providing they can be carried without inconvenience.

The foregoing six observations and four pieces of general advice constitute the basic briefing for observations that can have very real value. In any specific project, of course, further briefing will be necessary. A general reference work is Richard Foster Flint, *Glacial Geology and the Pleistocene Epoch* (New York: Wiley, 1947). This book is in the library of the American Alpine Club

and will be found also in most large or well-equipped libraries.

To anyone who is planning an expedition and will let me know where it will go, I shall be glad to reply as to what we already know about glaciation and what new facts to look for. If the results are sent to me when the expedition returns, I shall see that they are included on the Glacial Map of North America. Each contributor to this map will be acknowledged on the face of the map itself.

If members of the American Alpine Club would be willing to act as a geologic auxiliary, they could bring appreciably nearer the time when our present problems will be solved and when we shall understand fully the remarkable events that transpired during the glacial ages many thousands of years ago.

American Alpine Club Research Fund

13. DIRT BANDS

JOEL E. FISHER

VALLEY glaciers exhibit, in occasional instances, unique cross-glacier concentric parabolic markings, termed "dirt bands." Figures 1 to 9 show examples of these beautiful and striking phenomena. Early glaciologists studied them and advanced theories as to their origin.[1] Best known of these earlier writers was Principal Forbes, from whose name all such concentric bands have been generally referred to in English as Forbes bands—the *Ogives* of Continental writers. It will be the attempt of this paper to show that there are two types of such bands, very similar to each other in superficial appearance, but totally different in origin. These types are called, in this paper, Forbes and Alaskan bands. Further, an attempt will be made to explain the origin of these two types.

Bradford Washburn has called attention to the fact that Forbes bands appear only on glaciers on which a substantial icefall exists farther up, and proposed the theory that such icefalls are prerequisites to banding.[2] He suggests that, in such an icefall, as shown in Figures 11 and 12, substantial glacier-wide blocks of ice ride down through the icefall, unsplintered; and that accumulations of dust occur in the intervening hollows and eventually provide, at the outrun below the icefall, alternations of dark ice from dirty icefall areas and of light ice from clear ones.

The writer has for some years been making a study of such bands, in the field as well as by photographs. His basic conclusion is that the contrasting banding is noticeable primarily on account of certain alternating differences in the texture of the ice, rather than on account of local concentrations of dust. His conclusions

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[1] Louis Agassiz, *Études sur les glaciers* (Neuchâtel, 1840), pp. 97-126; J. D. Forbes, *Occasional Papers on the Theory of Glaciers* (Edinburgh, 1859), p. 39; William Huber, *Les Glaciers* (Paris, 1867), pp. 197-200 and 206; I. C. Russell, *Glaciers of North America* (New York, 1897), p. 43; W. H. Sherzer, "Glacial Studies in the Canadian Rockies and Selkirks," *Smithsonian Miscellaneous Collections* (Quarterly Issue), XLVII (1905), 465 ff.

[2] "Morainic Bandings of Malaspina and Other Alaskan Glaciers," *Bulletin of the Geological Society of America*, 46: 1879-89, 1935.

agree with Washburn's as to the icefall's being the mechanical spacer of Forbes bands (in so far as true Forbes bands are concorned), but not as to the surface dust's concentrating in the hollows and becoming the coloring agent. With respect to the other type of bands, the Alaskan, the writer has quite different conclusions, conclusions that provide grounds for agreement with Vareschi's studies of pollen distribution.[3]

Distinguishing Forbes from Alaskan bands, one may note that

In Forbes bands:

1. The dark band is wide—outstandingly wide.
2. Its upper and lower boundaries are clean-cut.
3. In cutting across a moraine, the light band *may* be clean of debris, while the dark area is loaded with debris.
4. The span of each pair of bands is great (as much, often, as 300 feet), representing one full year's flow of the glacier, and remains constant, unless the glacier's velocity is reduced by fanning out, etc.
5. The banding tends to disappear around the receding flanks of the glacier and, on occasion, on approaching the toe.

In Alaskan bands:

1. The dark band is much narrower than the white—always, a narrow-ribbon.
2. Its upper boundary will be clean-cut, but its down-glacier boundary is often hazy.
3. Medial moraines will be pretty constant in width, over both white and dark segments, if originating far up-glacier.
4. The span of each pair of bands may be as short as 50 feet, and may well become shorter and shorter, near the end of the glacier, even if the glacier does not fan out.
5. The banding becomes more distinct, if anything, around the receding flanks of a glacier, and near its toe.

A comparison of Figures 1 to 6 (Forbes bands) with Figures 7 to 9 (Alaskan bands) will clarify these comparisons.

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[3] Volkmar Vareschi, *Die Pollenanalytische Untersuchung der Gletscherbewegung* (Bern, 1942). Since the principles of gravitational and extrusion flow of ice are at times involved, reference is made also to M. Demorest and R. F. Flint, *American Journal of Science*, 240: 31 and 113, 1942.

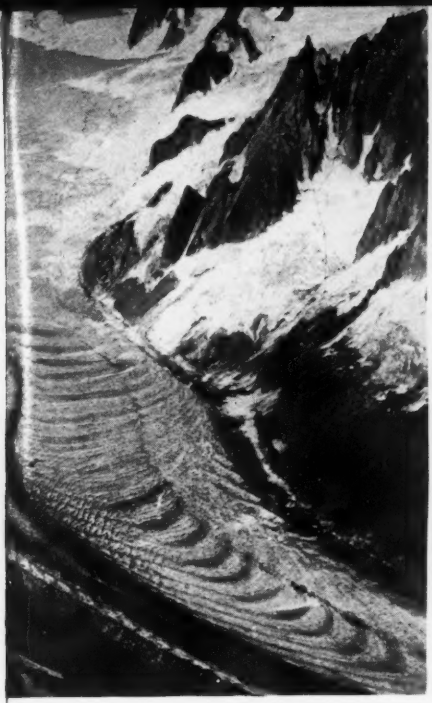


FIG. 1—GLACIER DU GÉANT (*Alps*)
(*Forbes Type*)

Felix Julen

FIG. 2—AROLLA GLACIER (*Alps*)
(*Forbes Type*)

Felix Julen

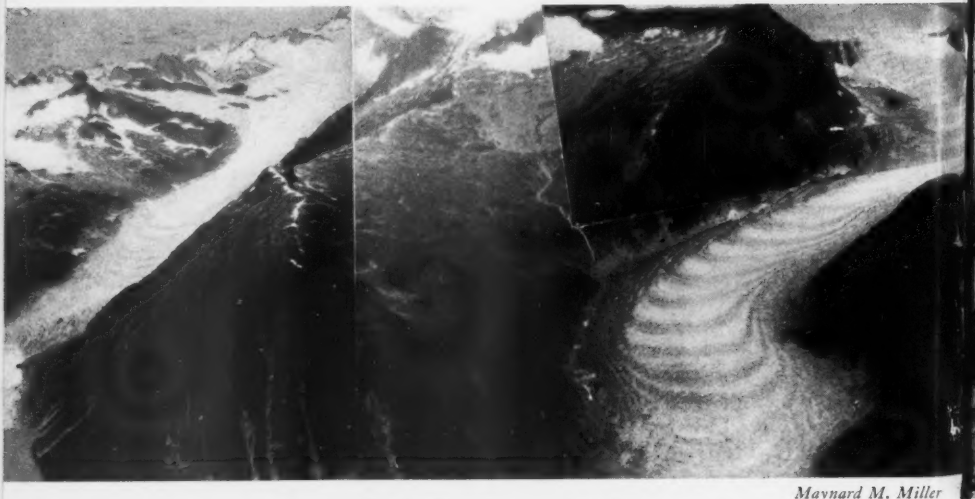
FIG. 3—TRIFT GLETSCHER (*Alps*)
(*Forbes Type*)

A. L. Wood

FIG. 4—AUSTERDALSBRAE (*Norway*)
(*Forbes Type*)

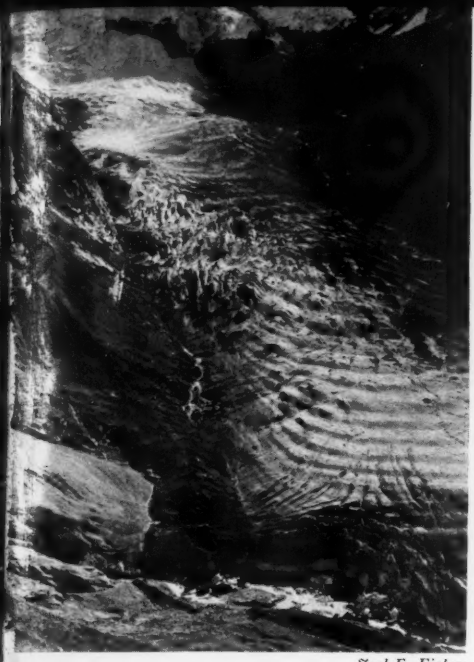
Joel E. Fisher

FIG. 5—COWLITZ GLACIER (*Mt. Rainier*)
(*Forbes Type*)



Maynard M. Miller

FIG. 6—TWIN GLACIERS (*Alaska*)
(*Forbes Type—and note disappearance of bands where extremest basal ice outcrops near snouts*)

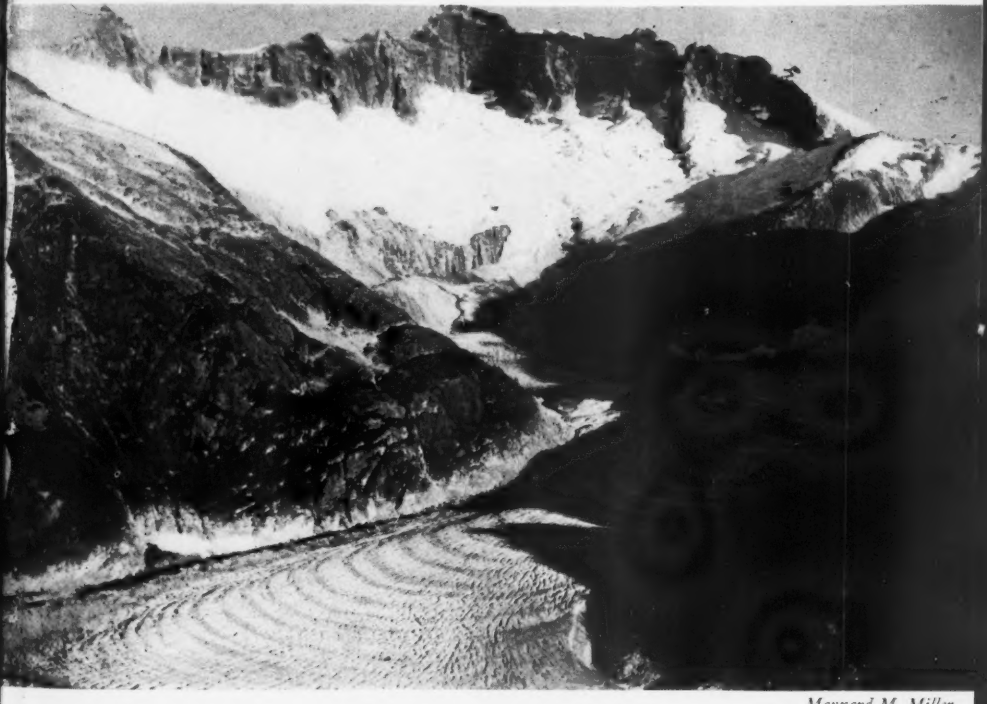


Joel E. Fisher

FIG. 7—MT. MINÉ GLACIER (*Alps*)
(*Alaskan Type*)

Dr. Charles S. Houston

FIG. 8—AIR VIEW OF TWO ALASKAN GLACIERS
EACH DISPLAYING ALASKAN TYPE BANDS



Maynard M. Miller

FIG. 9—BAIRD GLACIER (*Alaska*)
(*Alaskan Type*)

Joel E. Fisher

FIG. 10—CONTACT OF DARK AND LIGHT BAND ON TRIFT GLETSCHER (*see Fig. 3*)

(FIG. 11—*Refer back to Fig. 1*). LOOKING DOWN ON IC FALL OF GLACIER DU GÉANT. NOTE ISLANDS OF UN CREVASSED NÉVÉ RIDING DOWN THROUGH ICE FAL

Joel E. Fish

FIG. 12—CLOSE-UP OF ICE FALL OF TRIFT GLETSCHER (*Fig. 3*) SHOWING, AS IN FIG. 11, HOW ISLANDS OF UNCREVASSED NÉVÉ, HERE PARTLY SMOTHERED OVER WITH ICE DEBRIS, RIDE DOWN THROUGH ICE FALL

Forbes Bands

Forbes bands will be examined first.

Washburn's glacier-wide islands of ice, riding down through icefalls, are well shown in Figures 11 and 12. Figure 2, particularly, shows that the outflowing dark areas occupy hummocks of ice, the clean ice being in the hollows. This relationship, clean hollow vs. dirty hummock, is eventually reversed down-glacier, because clean ice suffers less surface melting by radiation than dirty ice. It is possible, in several illustrations, to identify a continuity of these hummocks of the outflow with the "islands" in the icefall, although surface ice debris on the lower part of every icefall partly smothers under its froth any true structural formations of ice of the glacier proper. Even so, the existence of multitudes of crevasses in every icefall makes it clear that the flow of ice down the icefall must be by simple gravitational flow, not by any extrusion continuing through the entire icefall from above—such that there can be no great pressure bearing down on the outrun of ice, as is imagined by some writers.[4]

The essence of this paper is the proposal that the dark bands are the lineal descendants of the above-mentioned glacier-wide islands of ice riding down through the icefalls, while the white bands are the descendants of the inlays of snow and of ice debris, in the crevasses separating those islands of ice in the icefalls.

Granted gravity flow, the looser "aerated" accumulation of powder snow and finer ice debris, within the glacier-wide crevasses separating glacier-wide islands in the icefall, is not subject to any great length-wise compression, especially near the top of the icefall, whence its firnification dates. Rather, such inlays of fresher snow and comminuted ice *are years in arrears* as to their state of firnification (a process accelerated by compression, as well as by other agencies), compared to the matrix of ice, in the outrun, which came down intact, from the upper névé, through the icefall, in the shape of those glacier-wide islands of ice. As a test of this inlay theory, the writer arranged in 1946 for a series of piles of bright-colored beads to be strewn above the icefall of the Mer de Glace.

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[4] R. Streiff-Becker, "Beitrag zur Gletscherkunde: Forschungen am Claridenfirn im Kanton Glarus," *Denkschriften der Schweizerischen Naturforschenden Gesellschaft*, 75: 111-32, 1943.

Ten years hence, when this locality has travelled down through the icefall, relative absence of beads in the white bands would prove this proposal.[5]

It is this *difference in degree of firnification* which primarily accounts for the darker and lighter bands below the icefall. Not only is the less completely firnified ice, with its myriads of air bubbles, intrinsically whiter to the eye, but its surface *appears* more dust-free, to the observer, for this remarkable reason: It is a peculiarity of glacier ice that dust and fine dirt on its surface will bore dust holes quickly to a depth of several inches into "aerated" ice, but not at all into hard, non-aerated ice. Figure 10 illustrates this. Presumably, this selectivity would be due to the greater albedo of the whiter (aerated) ice, whereby ablation by radiant heat is minimized for the whiter ice itself—concentrated entirely underneath each particle of implanted absorbent dirt so that those dust particles rapidly melt the ice beneath, when it is "white" ice on which they lie.[6]

On darker ice, heat is absorbed just about as fast by the ice itself as by particles of dirt thereon, so no such fillip is given to any boring process. Result: all surface dust on darker ice remains on the surface, visible to the observer.

The final result is that those inlays of fresher snow and of slithers of ice, laid down in the intervening crevasses of the icefall, ride out below, not only whiter in themselves, but with any dust which may have accumulated on their candid surfaces now hidden, in so far as the eye of any observer is concerned, at the bottoms of the myriads of dust wells which honeycomb its surface. Result: these inlays appear *exceptionally* white to the eye.

The following diagram illustrates the process, as envisioned by the writer:

A, B, C, D, E represent ice debris and drifting snow which fill

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[5] For map showing exactly where these beads have been planted, see *A.A.J.*, VI (1947), 331. Note, however, that the other experiment described in that place—cleaning the névé surface of the Trift Glacier (Gotthardmassif)—has since been found valueless, inasmuch as surface dust plays an unimportant part in determining the contrasts between dark and light areas.

[6] Inasmuch as "aerated" ice is about 10% less dense than normal ice, the same quantity of heat, furthermore, will melt it faster than normal ice. My guide, Felix Julen, under my direction, has measured the density of "aerated" glacier ice as about 0.83, which compares with a density of 0.92 for glacier ice containing relatively few air bubbles.

up the crevasses between the glacier-wide blocks of névé ice (1, 2, 3, 4) which calve off the upper plateau each year. A is coarse

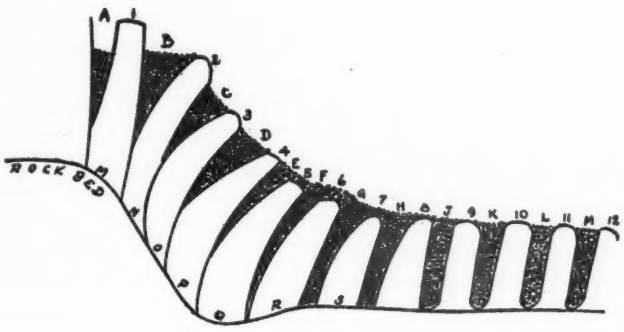

Fig. 13

debris; B, the second year, becomes more pulverized and more compact; C, even more so; D and E are well on the way to refirnification, although each inlay always lags many years behind the adjacent unsplintered islands of original névé, in degree of firnification. Always, these inlays confine substantial air bubbles.

Bases of island blocks of ice, as at M and N, are under substantial compression, being on the inside of the vertical curve of the profile of the glacier, while the bases of the lower blocks, such as P, Q and R, while by no means under actual tension, are under relatively less compression, being here on the outside of the reversed vertical curve of the profile. It follows[7] that, under isothermal conditions of the ice, ice at M, N and O will tend to be soft and yielding, while ice at P, Q and R will be hard, rigid, with greater cutting power—complying exactly with the condition demanded for scour-

[7] J. E. Fisher, "The Pressure Melting Point of Ice and the Excavation of Cirques and Valley Steps by Glaciers," *A.A.J.*, VII (April 1948), 67-72.

ing out the typical below-grade hollow at the base of every such step, in the profiles of glaciated valleys. In the meantime, being relieved of much compression at their bases, blocks 4, 5 and 6 allow the inlay between the intervening crevasses, E and F, to work down to the rock bed, so that from 6 on down every island block of ice is separated from its neighbor by an inlay of ice less completely firnified than in its own body and more aerated, extending right down to the bed, *e.g.* G, H, J, K, L, M. Along the surface of the icefall, ice blocks 5, 6 and 7 may well be smothered under a froth of excess ice debris, but once that froth vanishes, by surface ablation (as at 9), one will observe below such an icefall a succession of alternately whiter and darker bands on the surface of the glacier, each inlay, as J, K, L, M, being the whiter, more aerated ice, and each ancient block, 9, 10, 11, 12, the more completely firnified, and therefore the darker ice. Some dirt accumulated on the surface, above A, may even survive on surfaces 9, 10, 11 and 12, giving them a still darker appearance.

The mechanism of major crevassing in icefalls differs from that of crevassing elsewhere on a glacier, in that icefall crevasses remain open until filled in by surface snow and debris, while crevasses elsewhere on a glacier normally close up by contraction, long before surface debris fills them up. No scars of white inlays, therefore, survive to mark such other crevasses, in contrast with the white inlays marking icefall crevasses.

Alaskan Bands

As to Alaskan bands, any icefall theory cannot prevail. As Figures 7 and 9 will show, they are not preceded by such typical icefalls. Further, we have the interesting studies of Vareschi: on the Aletschgletscher in the Oberland, and on the Gepatschgletscher of the Ortler district, *dark* bands of his *Ogives* carry pollen preponderantly of summer production, while the light bands of the *Ogives* carry much less pollen and, at that, pollen characteristic of fall and winter. These Aletsch- and Gepatschgletscher *Ogives* are bands of the true Alaskan type. While Vareschi does not appear to recognize the basic differences between Forbes and Alaskan bands, his studies, actually restricted to the Alaskan type (Aletsch- and Gepatschgletscher bands), bear out the writer's conclusion that

dark bands of the Alaskan type are the outcrops of "fossilized" strata of snow laid down under suitable conditions in summer, when firnification proceeds fastest; and that the white areas are the outcrops of strata of winter snow, laid down in below-freezing conditions, with but little sun. It is quite obvious that snow deposited under summer skies will firnify faster than snow deposited under wintry conditions; and, when the contrast between the two seasons is sufficient (whether because of the typical differences of Arctic summer and winter in high latitudes, or because of physiographic shelter and exposure), then Alaskan bands develop. This relative difference in firnification of alternate strata, in Alaskan banding, produces exactly the same difference in apparent coloration that it produces in Forbes banding. It is notable that Alaskan bands occur chiefly on far northern glaciers where the difference between summer and winter, as to firnifying factors, is greatest, and on such occasional glaciers of temperate regions as happen to develop from névé catchment areas in which summer sun is exceptionally potent and, by the same token, in which winter snow accumulation is largely sunless. For example, the Jungfraufirn and the Ewig Schnee Feld above the Aletsch, and the cwm at the base of the north wall of the Breithorn, are areas outside of the Arctic in which contrasts between summer and winter would be particularly favorable to Alaskan banding, and glaciers flowing therefrom are among the few Alpine glaciers which do display banding of the Alaskan type.

It is not difficult to see how such annual stratification, even where there is only moderate extrusion flow, will intersect the surface, lower down the glacier, spaced much closer together than one single year's flow of ice. Where there is pronounced extrusion flow, not only will this closer spacing be even more marked, but also the faster flow of the lower levels of a glacier will result in a vertical thinning of those same lower strata; and when those thinner strata eventually intersect the surface, far down glacier, they will be necessarily very close together because, once thinned, they can never thicken again. This process explains why Alaskan banding is often more closely spaced near the toe than farther up glacier. In judging from some vantage point an apparent change in the spacing of bands, one must make careful allowance for perspective, if looking down-glacier. The following sketch shows the mechanism of the formation of Alaskan banding:

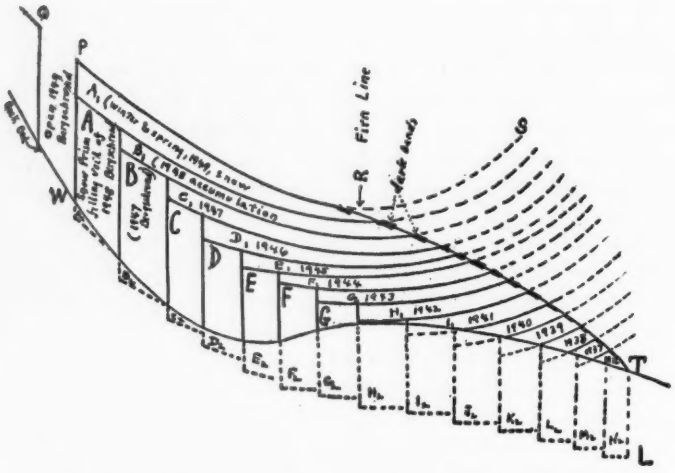

Fig. 14: GROSSLY EXAGGERATED CROSS-SECTION (PROFILE) OF AN ALASKAN-BANDED GLACIER

QP is the bergschrund, open in summer of 1949.

A, B, C, D, etc., are prisms of snow and avalanched névé which, each winter and spring, successively filled up the open voids of the preceding summer's bergschrund. These buried prisms, common to all mountain glaciers, make no contribution to any banding.

A_1, B_1, C_1, D_1, etc., are the annual surface accumulations of snow, overlying preceding years' accumulations and overlying the prisms A, B, C, D, etc.

R is the firn line, below which ablation exceeds accumulation. The dotted area *RST* indicates the imaginary volume of surface accumulation eliminated to date by surface ablation.

B_2, C_2, D_2, E_2, etc., are the exaggerated imaginary volumes of B, C, D, E, etc., eliminated to date by basal melting.

While *PRTW* is the actual volume of the glacier today, *PRSTLW* is the imaginary volume which would be occupied by the glacier were there neither surface ablation nor basal melting.

Where there is a marked difference in conditions under which the winter and summer parts of surface strata A, B, C, etc., accumulated, such as to develop a white, aerated névé from dry, powdery winter snow, and a definitely darker, denser névé from summer snow, etc., outcrops of B_1, C_1, etc., at the surface, below the firn line, will present a sequence of light and dark bands. The spacing of these bands will be less than a whole year's travel of the glacier, for all strata accumulated from 1937 to 1949 must outcrop within the eight years' travel between R and T.

Summary

Both Forbes and Alaskan bands are then to be considered as owing their appearance to slight differences in the degree of firnification of the ice in the alternate bands, differences which not only

produce ice of white or gray hue, but also favor the hiding of dirt in shallow surface dust wells on the ice which is already the whiter.

The processes which produce the two types are, in Forbes banding, a vertical splitting up of the ice, by great cross-glacier crevasses in the icefall, such crevasses being immediately back-filled by fresh surface snow, or ice debris; and, in Alaskan banding, a condition of accumulation conducive to extreme variation between summer and winter texture of snow, resulting in decidedly noticeable annual stratification. There being no *pronounced* extrusion flow possible below any icefall, Forbes bands must always appear under near-gravity flow, so that the vertical structure (Forbes banding) induced in the icefall retains its near-vertical orientation, all the travel below. There being more or less extrusion flow where there is no icefall, the horizontal strata (Alaskan type) from high up tend to be rotated into vertical strata, deep within the glacier, as the glacier flows; and, when at length these strata intersect the surface of the glacier far down its course, they appear to be nearly vertical, strongly simulating the Forbes design.

PROCEEDINGS OF THE CLUB

Secretary's Annual Report

Year 1948 (6 December 1947 to 4 December 1948)

The past year has been an active one for the Club's officers.

Since the Annual Meeting on 6 December 1947, four meetings of the Directors have been held at the Club House in New York on February 14th, May 15th and October 2nd, and this morning's meeting of December 4th, 1948. During this period the Club has enjoyed a gain of 14 Active Members. Seven members, namely, Col. E. L. Strutt, Henry S. Adams, François E. Matthes, M. P. Bridgland, Frank N. Waterman, George M. Weed, and Rollin T. Chamberlin, died; 21 Active Members have been elected. In addition, we have been privileged to elect to Honorary Membership three distinguished mountaineers and explorers, namely, Belmore Browne, Albert H. MacCarthy, and Sir Hubert Wilkins. The Club now has 12 Honorary Members and 332 Active Members, or a total of 340 members, four Honorary Members also being Active Members.

The Club has, during the year, become established more firmly in the new quarters on 90th Street. An official housewarming was held on February 14th. Informal teas were popular, 37 attending the last one on May 15th. A series of informal evening meetings was started this fall. Forty-eight attended on October 27th, and 42 were present at the second meeting on November 17th.

In addition to activities in New York, our two sections on the West Coast, the Cascade and Sierra Nevada Sections, have been active, the Secretary of the latter reporting on September 25th that 15 members and 18 guests attended a Club meeting in Berkeley.

In addition to routine notices from the Secretary, members received the Club *Journal* in April, and in May a separately printed copy of the first report of the Safety Committee, issued under the title "Mountaineering Safety."

Your Secretary has enjoyed a sizable correspondence with members in the distant parts of the globe, receiving letters from Wood and Jackman in Alaska, from Hall and Fisher in Switzerland, and even from Bakewell in India. Herman Ulrichs sent an interesting account of his travels in the higher altitudes of Chile.

To mention a few of the outstanding mountaineering activities of members last summer, we note especially the three weeks' two-headed Selkirk Expedition led by Hendricks on the one hand, and Kauffman and Putnam on the other, the party being supplied by air and travelling with unusually light equipment and achieving many first ascents in this mountain area; also the Garner first ascent of Brussels Peak in the Canadian Rockies, and the Ayres-Oberlin second ascent of Mount Alberta. Walter Wood led the expedition "Snow Cornice" to the Seward Glacier, and Miller and Latady led a party studying the Juneau Ice Cap. Field led a scientific field expedition in the Athabaska Valley. This does not pretend to exhaust the list of members climbing during the summer, but merely suggests some of the outstanding trips.

BRADLEY B. GILMAN,
Secretary

Annual Meeting and Dinner

The 46th Annual Meeting of the American Alpine Club was held at the Club House, 113 East 90th Street, New York, New York, on 4 December 1948, at 2.00 P.M.

President Wood called the meeting to order at 2.10 P.M., at which time 37 members were present. Another two dozen or more members and guests drifted in during the course of the meeting. President Wood announced that the deed of the Club House property had been delivered by Dr. Ladd to the Club and was in the process of being recorded. This announcement was greeted with applause.

As the Minutes of the last Annual Meeting had been printed in the *Journal,* it was voted to dispense with their reading and they were approved.

The Secretary's Annual Report was read and approved.

The Treasurer's Report for the close of the year ending 31 October 1948, was presented. After discussion about the lease and the anticipated income from securities, it was voted to accept the report.

Miss Buck read her Librarian's Report, and it was voted to accept it with warm thanks.

Mr. Bates reported for the Editors of the *Journal,* asking for remarks on the content and the format of the *Journal.* Mr. Perkins suggested that any change in the size would be unfortunate for those members who were binding their *Journals.* The President commented on the wealth of material now in hand for future issues of the *Journal.* It was voted to accept the report of the Editors.

Mr. Miller presented a report for the Safety Committee, stating that 11 mountaineering accidents, the same as last year, had come under consideration by the Committee so far. The consensus was that the report of the Committee, when it was completed, should be printed in the *Journal* and reprints sent to the National Park Service and mountaineering clubs.

Mr. Case, Chairman of the Nominating Committee, presented his report, nominating Miss Gest, Mr. Measuroll and Mr. Miller for the three Council positions for the years 1949-51. As there were no further nominations, it was voted to close the nominations and to instruct the Secretary to cast one ballot for the slate, which was done; and the three nominees were declared elected Directors for the three ensuing years.

The President called attention to the distant members who were present at the meeting: Mr. and Mrs. Farquhar, from Berkeley, California; Mr. Bonney, from Houston, Texas; Mr. Kingman, from Minneapolis, Minnesota; Mr. Henry, from Des Moines, Iowa; and Mr. Friedmann, from Milwaukee, Wisconsin. The President introduced Mrs. Farquhar, chairman of the Sierra Nevada Section, who expressed her pleasure in representing that Section at the Club's Annual Meeting.

The President then commented on mountaineering in National Parks, especially expeditions on Mount McKinley, and introduced Mr. John Doerr, Chief Naturalist of the National Park Service, who had come on from Washington to attend the meeting as a representative of that Service. Mr. Washburn led a lively discussion on the need of regulations on climbing in the National Parks, illustrating his points with some of his experiences on Mount McKinley. Mr. Doerr then told the meeting that he would welcome any recommendations on their policy, as the American Alpine Club had originally helped to establish the present policy of the National Park Service, and that the National Park Service has every intention of continuing its program of training in mountaineering skills. A

number of members, including Messrs. Farquhar, Bates, Case, MacCarthy and Miller, entered the discussion, which did not result in any formal vote by the Club members. The consensus was that the Club would be glad to furnish the National Park Service with a list of recommended equipment for climbing in mountain areas in each park, and that the Service should adopt a policy of supplying such reliable information to prospective climbers, but that it should limit its climbing requirements to a registration of intent without insisting upon the issuance of a permit before climbing. Mr. Doerr emphasized again that the Service would be glad to receive recommendations from the Club on its policy and that it would welcome information about equipment. Mr. Doerr also suggested that the Club could assist the Park Service by securing from one of its members an article about the climbing possibilities in Glacier National Park, if such exist. The discussion concluded with the President's announcement that he was appointing a committee consisting of Messrs. Washburn, Moore, Houston and Hall, under the chairmanship of Washburn, to prepare a list of recommended equipment for climbing in McKinley National Park, the list to be submitted to National Park Service in Washington with the recommendation that it be forwarded to Superintendent Been in Alaska.

It was voted, on motion of Mr. Bonney, that the Club should appoint such other local committees as seemed best to provide the National Park Service with similar equipment recommendations for Mount Rainier, the Tetons and other mountain regions.

Mr. Putnam suggested that the procedure be adopted in the future of sending in advance, to all members, nominations of two or more individuals for each elective office to be voted upon by mail, or, as a possible alternative, that the Nominating Committee's report be circulated well in advance.

The President upheld the democratic character of the Club and assured Mr. Putnam that anyone willing, qualified, and interested in working for the Club would receive thorough consideration for nomination as a Director.

The business meeting was then adjourned, and the members were privileged to view a series of colored slides taken by Miss Gest at the Peyto Lake 1948 Camp of the Alpine Club of Canada. This beautifully illustrated talk was followed by a short but dramatic

illustrated account by John Oberlin of the second ascent of Mount Alberta. The meeting was concluded by moving pictures presented by Dr. Howorth of his ascents in Teton National Park of Symmetry Spire and the Grand Teton by Exum Route.

The Annual Dinner of the Club, held the same evening at the Cosmopolitan Club through the courtesy of Mrs. Wood, was one of the best attended dinner meetings in the history of the Club. Members and guests were privileged to hear an illustrated account by William R. Latady of the Ronne Antarctic Expedition, followed by an illustrated talk by President Wood on his expedition "Snow Cornice" on the Seward Glacier.

BRADLEY B. GILMAN,
Secretary

REPORT OF THE LIBRARIAN

1 December 1947 to 1 December 1948

WE ARE now so well established in our new quarters that the difficulties of getting settled are rapidly fading into the dim past. Nevertheless, the Librarian will never cease to marvel at the expeditious manner in which the hundreds of heavy cartons of books, pamphlet boxes and packages were hoisted to the second floor through the window and shoved or carried to their proper destinations on the coldest nights of January 1948. It was a tough job, hard on one's back and arms, and a very chilly one, too. No wonder that one of our husky alpinists was laid up for a whole week thereafter!

This feat of hoisting was accomplished by William O. Field, Jr., Maynard Miller, Mr. Neil, our efficient caretaker, and three of their friends who had been lured to assist. Unpacking the books was another backbreaking job. Had it not been for the invaluable aid of M. André A. Perebinossoff, of the French Alpine Club (Maritime Alps Section), we should never have been ready for the housewarming on 14 February 1948. His unfailing good humor and his knowledge of mountaineering literature lightened the burden of this task, as did the tea and cakes served by Mrs. Neil every afternoon.

During the year car- and truckloads of Club property formerly

stored by H. S. Hall, Jr., and J. E. Fisher were returned. This material included many cartons of Club publications and records, now stored in the basement, and a mass of photographs, negatives, slides and notes from the estate of Howard Palmer.

The elimination of irrelevant material, the making of new inventories, and countless other details required so much time and attention from the Librarian that the assistance of Mrs. Allen Carpé was secured for 48 hours a month from February to December 1948.

Members and friends made the following donations to the Library and the Club rooms in 1948:

The Anglers' Club, through Mr. Oscar Houston: two alpenstocks —one a tourist cane, and the other a very long one which belonged to the late D. P. Sackett, who made excursions in the vicinity of Chamonix in 1873.

F. D. Ayres and J. C. Oberlin: summit record of the first ascent of Mount Alberta, and ice-axe left there by the Japanese party in 1925; photographs and other data concerning Mount Alberta.

Mrs. Carpé: a box of Allen Carpé's slides.

H. S. Hall, Jr.: books, catalogues, pamphlets, Swiss maps, posters, and a framed photograph of Field Marshal Smuts.

Dr. Ladd: books, journals, Andrew Taylor's scrapbooks and negatives, and an early deed to the property at 113 East 90th Street.

Mr. Miles: two oblong flat cases for medals, in one of which he has arranged and labelled the badges, coins and medals donated by Dr. Thorington and others.

Mrs. Orcutt: journals, clippings, mountain stamps, and a framed autographed photograph of V. Sella.

Dr. Thorington: many framed pictures; his own charcoal drawings, pastels and oil paintings, of which four have been specially framed; badges, coins, medals, miniatures, prints; two boxes of slides of the Alps and Canadian Rockies; many books, one dated 1520; journals, magazines, clippings, photographs, posters; four fine exhibit cases; two Bavarian alpenstocks used by him in the Eastern Alps, 1909-10; the rare Troye reliefs of Mont Blanc, Mont Cenis, the Simplon; Beck's relief of Switzerland; part of an ancient window from a church in Lucerne, with local coats of arms, 1684; six other oil paintings, including two by Gabriel Loppé.

A. E. Bent, U. Corning, E. Cushing, G. Dawson, G. Hemingway, E. Knowlton, H. Mills, N. E. Odell, W. Putnam, Mrs. Rubissow and various publishers: miscellaneous contributions.

The total number of volumes in the Library now is 4535.

Helen I. Buck,
Librarian

The American Alpine Club and the Museum Idea

J. Monroe Thorington

In the Presidential Address of 1941, the present writer offered as one of the Club's objectives the furtherance of the *Museum Idea,* which might be made possible by "quarters in New York large enough to accommodate our informal meetings, and where the treasures that are available to us can be properly displayed." This visionary project has become a reality through the acquisition of the new house at 113 East 90th Street.

The fact that it is a remodelled firehouse allows us a room on the ground floor where 125 members and guests can be seated for the showing of pictures, with screen and projection mounts in fixed positions. Since the first of the year 1949, we have added a series of museum cases in which our principal exhibits are shown, with printed cards such as are used in the Metropolitan Museum. One case contains badges and medals, and two cases with glass shelves and lighting units exhibit geological specimens and various mementoes of the Alps. A large case, 14 feet in length, is at present displaying rare Alpine books of the 16th, 17th and 18th centuries. In another case are shown the Troye reliefs of Mont Blanc, and of the Mont Cenis and Simplon passes, constructed in London about 1813 and probably the earliest reliefs of the Alps to be made in England.

Two tall mahogany cases are being used for print exhibits. For the January symposium on glaciers, a program arranged jointly with the Arctic Institute, some seventy 18th- and 19th century prints of Alpine glaciers were on view. In March a new show was set up of 19th-century costume prints, chiefly Swiss and Austrian. During the summer the cases will contain American views, and further exhibitions are projected.

On the walls of the auditorium many pictures are hung, notably the two imposing oils of the Matterhorn and the Grands Charmoz

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AMERICAN ALPINE CLUB: MAIN ROOM, SECOND FLOOR
Top: lounge at north end
Bottom: looking from north to south
Photos, Victor Kayfetz

by Gabriel Loppé (1825-1913), the first artist to specialize in the painting of ice and snow. We also possess the spectacular oil of Kangchenjunga painted by Colin Campbell Cooper in 1915.

The Club has also acquired a unique collection of items relating to early American participation in Alpine climbing. On the first floor are the ice-axes and alpenstocks, some of them now a century old, while the walls of the second floor, where the library is located, are covered with photographs and documents.

The library now approaches 5,000 volumes, an important group having come from the Montagnier collection. The shelves rise under fluorescent lighting, and properly arranged tables and chairs make for comfortable reading. On this floor there is also a series of relief maps of the Canadian Rockies and other districts, as well as cabinets containing classified maps, prints and photographs, among the latter being numerous examples of Vittorio Sella's work.

During the winter, monthly evening meetings have been held, with several afternoon teas. During the Christmas holidays, a reception was given for undergraduate members of various college and university mountaineering clubs, at which time a program on mountaineering safety was presented.

In short, we have begun to justify the house as a means of preserving and showing the items connected with the history of our sport, and the membership may take pride in our progress.

AMERICAN ALPINE CLUB

Top: south end of main room, second floor. Office adjoins, looking out on 90th Street
Bottom: meeting and exhibition room downstairs

Photos, Victor Kayfetz

IN MEMORIAM

EDWARD WARREN HARNDEN
1865 - 1949

Mountaineers are always indebted to those who, after exploring a region and discovering the enjoyment of it for themselves, take pains through their writing to induce others to follow after them and experience similar joys. Such an enthusiast was Edward Warren Harnden.

He was one of the first to climb regularly in the Purcell Range. Although lack of condition prevented him from reaching the summit of Mount Nelson in 1910, he took part in the first ascent and returned in 1911 to make the second ascent. In the same year he made first ascents of Mount Toby, Mount Catherine and Mount Monica; he was also the first to ascend Mount Sir Charles in 1913 and Eyebrow Peak in 1914. Eventually he shifted allegiance to the Colorado Rockies, where from 1922 to 1935 he climbed extensively, reaching many summits, among them those of Holy Cross Mountain, Longs Peak and Mount Elbert.

His enthusiasm for these two regions, so well reflected by a number of articles published in *Appalachia,* the *Canadian Alpine Journal* and the *Sierra Club Bulletin,* did not prevent him from climbing widely in the Cascade Range and doing scattered ascents elsewhere in this country. His record further reveals that he climbed in the Alps and journeyed to Alaska, where he engaged in scientific study of the coastal glaciers, particularly at Prince William Sound and Copper River.

Edward Warren Harnden was born in Boston, Massachusetts, on 25 April 1865, and died on 21 January 1949, in California. He was the son of Charles W. and Monica (King) Harnden. His early education at the Somerville High School and later training at the Northeastern Law School led to his admission to the Massachusetts bar and a career as lawyer and legislative reporter. He was a member of the Appalachian and Colorado Mountain Clubs, the Sierra Club, the Mountaineers, the Alpine Club of Canada and the Estes Park Chamber of Commerce.

Harnden will be remembered as one of those who pioneered in North American mountaineering and successfully interested others in his discoveries.

W. S. C.

ALLSTON BURR
1866 - 1949

Allston Burr, long a member of the American Alpine Club, died in January 1949 at the age of 82. His life was one of quiet accomplishment, devoted to his family, to his wide circle of friends and to his great interest in and generous support of many charitable, educational and artistic activities. Throughout his life one of his most outstanding qualities was a modest humility that made him shrink from publicity or acclaim and clothed his many worthy deeds in anonymity. Even to his most intimate associates, he was loath to talk of his personal affairs and it is difficult for any one of us to evaluate truly the extent of his generosity. Among all other interests there is no doubt that Harvard University, his Alma Mater, was in the forefront, and he was ever ready to do his considerable part financially and otherwise to promote its welfare. The cloak of modesty was nowhere more clearly in evidence than in his unwillingness to talk freely about his many first-class mountaineering accomplishments, although a bare recital of them is no doubt set forth in the records of the American Alpine Club. He started belatedly, as his first ventures of any moment on rocks and snow were undertaken when he was nearing 40, but thereafter he was an enthusiastic climber and an able one. His field was almost exclusively Switzerland, and on nearly all of his principal climbs his chief guide and close personal friend was Gottfried Bohren, of Grindelwald. Together they made the first traverse of Jungfrau, Mönch and Eiger within a period of 24 hours, a traverse of the Matterhorn by the Zmutt Arête and the Italian side, the ascent of Mont Blanc by the Brenva route and many other climbs of equal merit. His friends are saddened at his death not only by the sense of personal loss they all feel deeply but by the loss to his community, which cannot well be repaired. It is Gottfried Bohren who, after learning of his death, writes that he was "strong, courageous and safe," as well

deserved tribute to a mountaineer and a just appraisal of Allston Burr's outstanding qualities as a citizen.

H. S. G.

JULIA KENNETT COLT
1878 - 1948

Julia Kennett Colt, the eldest child of John and Violet Kennett Whittaker, was born on 1 April 1878, in St. Louis, Missouri. The Whittakers spent the summers in Bar Harbor, Maine; and there as a child, accompanied by an energetic governess, she scoured the hills of that rocky coast and no doubt acquired the love for climbing and exploring any region where she found herself that she kept to the end of her life.

In 1896 she was married to James S. Wadsworth and came to live in the Genesee Valley of western New York, where she at once took an active part in the country life and sports for which it was then well known. She quickly became a good horsewoman, devoted to riding and hunting. The following 25 years she passed chiefly in these surroundings. Of her two sons the elder, Livingston, was killed in active service in France, August 1918, at the age of 20.

In 1908 she married Henry V. Colt, of Geneseo, New York; and in the fall of 1920, with their three daughters, they sailed for Europe where, with the exception of a few brief returns to America, she remained for the next 15 years. At this time, one or two summers spent in the Austrian Tyrol gave her the opportunity to climb again for the first time since her childhood; and from 1925 until 1933, with her daughters, she spent every summer in the mountains of Switzerland and northern Italy.

Her climbs included the Cima di Jazzi, Petite Dent de Veisivi, Aiguille de la Za, La Roussette, Aiguilles Rouges d'Arolla (traverse), Col d'Hérens, Col de Bertol, Neues Weissthor, Aiguille du Géant, Gran Paradiso, Grivola, Monte Viso, Ortler, Gross Glockner, Riffelthor, Monte Cristallo, Punta Fiammes, Cinque Torri (all), Croda da Lago (traverse), Tofana di Mezzo, Cimone della Pala, Fünffingerspitze, Torre Stabeler, Catinaccio (Rosengarten), Pomagagnon.

She was a clever artist from youth and during this time spent

several winters studying in Munich, where she became much interested in the Dutch school of flower-painting and developed a fine technique for this style of art. Fortunately she has left a number of exquisite examples of this now little known manner of painting.

Her sudden death on 14 July 1948 came as a great shock to her family and friends.

Julia Colt was a rare and gifted person of wide and varied interests. The foregoing account of her life is inadequate and far from doing full justice to all her qualities—her exceptional intelligence, understanding and vitality, which left an indelible impression on all who knew her.

J. C.

[It is of particular interest to add that in 1927 Mrs. Colt rented a herdsman's hut high up on the Alpe de Breonne in order to study with the Swiss painter François de Ritanpierre, who was living near by. She did a pastel of the head of the Ferpècle Valley with the Dent d'Hérens and Bouquetins in the background. This picture is now in the possession of her daughter, Mrs. Julia Colt.—W. S. C.]

BOOK REVIEWS

The American Mountain Series, edited by Roderick Peattie. New York: The Vanguard Press, 1942-48. Prices, $3.50-$5.00*

These books are designed rather to give the reader a general impression of the mountain ranges of the United States than to serve him as guides to the regions described. To this end, most of the volumes in the series are composite attempts on the part of a number of authors to delineate, each in his own way, the different facets of the different ranges. While all the volumes have a distinguishable common pattern, embracing a consideration of the geology, natural history, etc., of each range, there is considerable variation among them in the treatment of the other matters. Thus in the volumes dealing with the eastern ranges, the human element is stressed, the history of the early settlements and their development, and (in the volume on the Smokies) the characteristic residual culture of the 18th century. The recreational potentialities of all the ranges are brought out, but usually in a way calculated to stimulate the imagination, not merely in a dry recital of places and attractions.

In most of the volumes, a number of authors have collaborated, each contributing one or more chapters. One result, as might be expected, is a certain amount of repetition, but this has been reduced to a minimum by careful editing and is seldom tedious. The method has the great advantage of giving the reader a number of different impressions of the same range, and enabling him, when the contributors are well selected, to see it through the eyes of those men who are best acquainted with the aspects of it which they describe.

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* *The Friendly Mountains: Green, White, and Adirondacks.* 341 pp., 23 illustrations. 1942. $3.50.

The Great Smokies and the Blue Ridge. 372 pp., 29 illustrations. 1943. $3.75.

The Rocky Mountains. 324 pp., 32 illustrations, with maps and sketches. 1945. $3.75.

The Pacific Coast Ranges. 402 pp., 29 illustrations, 4 maps. 1946. $3.75.

The Sierra Nevada: the Range of Light. 398 pp., 26 illustrations, 1 map. 1947. $4.50.

The Berkshires: the Purple Hills. 416 pp., 35 illustrations. 1948. $5.00

The Inverted Mountains: Canyons of the West, 390 pp., 33 illustrations, 2 maps. 1948. $5.00.

This is one of the strong points of the series, one of the charms of the books to the reader who already knows something of the territory under discussion. The one volume which violates this principle, that on the Rocky Mountains—which is entirely the work of one man—is by all odds the least interesting of the lot. In fact, this volume, written by a geographer and geologist, tends to become merely a series of personal reminiscences, and does not evoke for the reader the drama and romance of the great period of exploration and migration which swept over and through these ranges. It provides little inspiration to the reader to know the range better. On the other hand, in the most recent volume of the series, *The Inverted Mountains,* we have a splendid example of the effectiveness of a composite production of several authors in bringing the drama and romance of the canyon country of the West to the reader. In fact, this volume appeared to this reviewer the most interesting and most skillfully compiled of the series, although here there occurs considerable repetition.

As might perhaps be expected, there is a wide variation in the quality of the several volumes of the series. The first volume, on the White, Green and Adirondack Mountains, covers too broad a field to do justice to any one of the ranges. For example, although the history of the settlement and touristic development of the White Mountains is given in some detail, the story of the controversy over the Vermont grants is only briefly sketched, and the early history of the Adirondack and Katahdin regions is completely ignored. A somewhat better distribution of emphasis is made in treating other aspects of these ranges, but it is certainly very difficult to follow the reasoning which assigned all three of them to a single book, and then dedicated an entire volume to the Berkshire hills. We can only conclude that the original plan of coverage was abandoned in favor of more volumes, for the benefit of the publisher and the editor.

The volume on the Great Smokies and the Blue Ridge covers only the southern end of the latter range, and this in a rather cursory way. The chapters on the early history of the mountain settlements are well-calculated to give life to what might otherwise be a rather drab account of an interesting region. While characteristic features—the backwoods population, old ballads, etc.—are treated as would be expected and the pleasures of summer travel are described, the mountains in winter are completely ignored.

Winter sports are not of course one of the advertised attractions of this region, but one who has not seen these mountains in winter cannot claim to know them fully.

The volume on the Rocky Mountains, in an attempt to delineate the delights of mountain travel, particularly pack-train travel, completely omits such matters as the historical development of the region; and it quite fails to bring out the significant variations in the scenic attractions of the area. Various ranges of the Rockies are mentioned with a nonchalance that is most disconcerting. Only casual reference is made, now and then, to the Canadian Rockies, though a large number of the illustrations is devoted to them. This is indeed a most uninspiring volume and will arouse little enthusiasm for the Rockies, unless perhaps in the breast of an embryo geologist. Nothing is said about these mountains in winter, despite their extensive development as a skiing and winter climbing area.

In marked contrast is the volume on the Coast Ranges. Here the history of the region from Indian days on is sketched in, giving the background for an understanding of some of the attraction of these ranges. Even economic factors, such as the wine-making in the California hills, are brought in. Here perhaps the attempt at broad coverage has been more successful than in other volumes, and a chain that to the mountaineer is of interest only at its northern end, in the Olympic Peninsula, is made to provide fascinations for all.

The Sierra Nevada is depicted, in its volume, quite completely, with sympathy, and in a manner to arouse interest. Historian, naturalist, botanist, geologist, mountaineer—each will find something here to hold his attention and goad him to further research. A book of this size cannot cover such a broad field completely, yet this one does succeed admirably in giving a sufficient concept of the various fields of interest to arouse a desire to learn more.

The task so well done in connection with the Sierra Nevada has been carried out even more brilliantly in the book on the canyon country of the Southwest, *The Inverted Mountains*. Here again the choice of collaborators was particularly fortunate and the results excellent. We can only hope that the remaining volumes of the series (and we must assume that the Cascades certainly, and probably the lesser ranges such as the Black Hills, the mountains of Texas and others, will not be forgotten) will be as sympathetically

treated by the authors chosen for the task. These two volumes, and perhaps to a lesser degree the book on the Coast Ranges, are examples of what can be accomplished by the style of treatment adopted throughout the series. These are significantly better than the first attempts in the eastern ranges, and far better than the treatment of the Rocky Mountains. In fact, we would go so far as to say that the latter range should be the subject of three or four additional volumes covering the southern, central, northern and Canadian Rockies.

The illustrations range from very good to excellent; in the Sierra Nevada book, where a number of Ansel Adams' pictures are used, they are superlative. Unfortunately, they are all bled and consequently do not appear to as good advantage as if they had been set off by adequate margins.* The format is pleasing, with large type and wide margins. Each volume is conveniently provided with an index. A number have bibliographies. Some of the volumes, however, fail to tell the reader where to find the maps or sketches. Everyone interested in mountains will want to read at least portions of all of these volumes, and most people will want them in their libraries.

KENNETH A. HENDERSON

Yosemite and the Sierra Nevada. Photographs by Ansel Adams, and selections from the works of John Muir, edited by Charlotte E. Mauk. Boston: Houghton Mifflin Company, 1948. 132 pages, 64 plates. Price, $6.50.

John Muir will doubtless remain, for another century at least, the foremost interpreter of Yosemite Valley and the region above and beyond it known as the High Sierra. But, except for enthusiasts, the very extent of his published writings might in the end obscure his influence were it not for the intervention of selections such as this volume provides. Here we have Muir at his best, presented in a form hardly to be surpassed. From Muir's writings extending through half a dozen books, Miss Mauk has chosen passages which, when sympathetically pruned and rearranged, succeed, as is her intent, in revealing "his sensitive response to beauty" and in pre-

*Which opinion compels us, in self-defence, to recall the words of Copperfield's friend Mr. Waterbrook: "Other things are all very well in their way, but give me Blood!"—*Ed.*

senting "a fairly complete description of the Yosemite country and a reasonably continuous narrative of Muir's exploration of it."

Not only is this book highly successful as a presentation of Muir's writings, but it is made doubly valuable by the equally successful selection of illustrations from the work of Ansel Adams. Mr. Adams, who has attained the stature of one of the world's great photographers, is at his best in his Yosemite work. It was in Yosemite that he began his photographic career, and it is there that he returns for continued inspiration after his ever-widening excursions into the rich scenic areas of America.

There are many parallels in the artistic achievements, as well as in the underlying techniques, of Muir and Adams. Each is profoundly affected emotionally, but not sentimentally, by the concentrated arrangements of massive mountain scenery as well as by the delicacy of its detail. But with the emotional experience there is also a comprehension of the underlying causes that finds expression in the case of Muir through his pursuit of the sciences of geology and botany, and in the case of Adams through his study of the quality of light and of the physical techniques of the photographic art.

The book that Ansel Adams and Charlotte Mauk have produced, with the most sympathetic cooperation of publisher, engraver and printer, is one, not only of importance, but of very wide appeal. A word should perhaps be said of its special appeal to mountaineers. In the first place, patient study of the details of Ansel's pictures followed by a period of contemplation upon their general aspect should enable the mountaineer, when next he walks in the highlands, to see and understand things that may not previously have received his attention. Pause, for instance, at Glen Aulin (No. 57) and watch the movement of water through light and shadow; examine the glacier polish in the Upper Merced Canyon (No. 49) and consider the origins of forms and markings; or look off towards the High Sierra from Sentinel Dome (No. 42) and absorb the sunlight as it is reflected from gleaming granite and distant snow fields. And in the text one may turn to almost any page for an example of John Muir's exalted concept of the meaning of mountains or for the sublimation of his emotions in physical enjoyment. His experience at the brink of Yosemite Fall (p. 63) should produce a thrill of admiration in the heart of even the most marginal of

modern rock climbers; and, for a more spiritual experience, a quotation (p. 47) may suffice:

"And so this memorable month ends, a stream of beauty unmeasured, no more to be sectioned off by almanac arithmetic than sun radiance or the currents of seas and rivers—a peaceful, joyous stream of beauty . . . this June seems the greatest of all the months of my life, the most truly divinely free, boundless like eternity, immortal, . . . never to be blotted or blurred by anything past or to come."

FRANCIS P. FARQUHAR

Yosemite, the Big Trees and the High Sierra: A Selective Bibliography, by Francis P. Farquhar. 104 pages, illustrations. Berkeley: University of California Press, 1948. Price, $7.50.

The shortest definition of bibliography is that it is the description and history of books. But here Francis P. Farquhar gives double measure. He presents us with the description and history of 25 notable books which in turn deal with the description and history of our greatest single mountain range—California's Sierra Nevada. So, when we have finished reading this delightful bibliography, we have not only gained considerable knowledge of the exploration and human development of Yosemite and the High Sierra, but also met and become acquainted with the men and women who wrote on these subjects from 1833 to 1915. And it is clear that they were an interesting group of people.

Farquhar leads off with "The Adventures of Zenas Leonard," first published in 1839. This is the diary of a young Pennsylvanian, member of Joseph Reddeford Walker's expedition, which made the second crossing of the Sierra in 1833. The party consisted of trappers and mountain men scouting from Great Salt Lake to California in the employ of Captain Bonneville's fur-trading company. Leonard was the first man to report on the precipices and waterfalls of Yosemite and the giant sequoias of the Sierra Nevada. As such, he deserves high place on the roster of Western explorers. However, it was not until 1851 that the valley was "discovered," named and presented to the world, and a year later that California's Big Trees made their public debut.

Farquhar then proceeds to trace the world's literary reaction to these Far Western marvels with discussions of such classics as

Hutchings' *Scenes of Wonder and Curiosity in California* (1860) and *In the Heart of the Sierras* (1886), Whitney's *Yosemite Book* and Guide Books (1868-1874), King's *Mountaineering in the Sierra Nevada* (1872), Bunnell's *Discovery of the Yosemite* (1880), and some 19 other books, pamphlets and portfolios of pictures.

John Muir is represented by his *Letters to a Friend,* written between 1866 and 1879 and published posthumously in 1915. They were addressed to Mrs. Jeanne C. Carr, a lady of broad understanding and tact who had great influence upon Muir's career. At first blush, it might seem that the author of *My First Summer in the Sierra* and *The Mountains of California* had been slighted. But, after all, this is a selective bibliography, ably explained and defended in a preface, and to do full justice to Muir's prolific literary output would require a separate volume. Possibly such a project is on Farquhar's writing schedule.

The world's startled reaction to the Big Trees is shown in three rare booklets from the author's own remarkable collection of Western Americana. Several *sequoia gigantea* in the Calaveras Grove were stripped of bark for more than a hundred feet, sections numbered and sent around the Horn to Boston, New York, Philadelphia and London. The bark sections were reassembled in those cities to give amazed citizens an idea of the true size of these "vegetable monsters"—at a price, of course.

One book on the list has never before, to my knowledge, been included in a Sierra Nevada bibliography. This is *The Conquest of Mount Whitney,* by Shuki Nakamura (Tokyo, 1931). This account, which reads from front to back and right to left, records the first Japanese ascent of the highest peak in the United States. One of Nakamura's two companions, Tadasu Kinoshita, wrote a more ambitious book, profusely illustrated, on the mountains of Western America from the Canadian Rockies to Southern California, including chapters on climbing Mount Whitney and trail packing in Sequoia National Park. A map of the Park with characters in Japanese looks slightly like an Oriental print. Farquhar lists the title of this book as *Record of the American Alps* (Tokyo, 1931). The title of my own copy has been translated for me as *Crossing the American Alps.* But since neither Farquhar's nor my accomplishments include a knowledge of Japanese we have no solid basis for argument. But we appear to be in violent conflict as to the

name of the "John Muir of Japan" to whom the book was dedicated: Farquhar's translator makes it Ojima Torimizu; mine, Usui Kojima. You can take your pick. At any rate, these volumes with Kinoshita's *The National Parks of the United States* make an interesting addition to books about the mountains of the American West.

Farquhar is an authority on the exploration and climbing records of our Western mountains and probably the foremost historian of the Sierra Nevada. Therefore, one is puzzled at one point to find this meticulous chronicler using a vague supposition when a pertinent and interesting historical fact was available. On page 62 he writes, "Although Walker's party, in 1833, had undoubtedly looked into Yosemite Valley from the rim above, and *more than one prospector in 1849 or 1850 had had a glimpse of it from some point of vantage,* the effective discovery dates from March, 1851 . . ." (italics mine). Whether prospectors saw Yosemite or not is conjectural, but a diary was discovered several years ago, written by an itinerant millwright named William Penn Abrams, which accurately describes an accidental visit to the valley on 18 October 1849. A notice of this diary appeared in the *Sierra Club Bulletin* for May 1947. Although judged by everyone who has seen it to be authentic, there seems to be some reluctance to include this interesting old journal, with the second recorded account of the valley, in the documented history of Yosemite.

As usual, the University of California Press has turned out a beautiful book and the nine illustrations—reproductions of title pages and portraits of authors—are excellent. We look forward to more volumes by Francis Farquhar on the history and lore of the Sierra Nevada, but we do entertain a faint hope that they may be produced at a slightly lower cost.

WELDON F. HEALD

Les Montagnes du Monde. Publié par la Fondation Suisse pour l'Exploration Alpine, Zürich. Lausanne: F. Rouge et Cie. Vol. I, 1946. Vol. II, 1947. Also, an edition in German, *Berge der Welt.* The institute which puts out these volumes has for its purpose sending out or assisting mountain expeditions. As part of its program it is publishing this mountain yearbook, intended to report not only on its own work, but also on important climbs and mountain

studies performed by anyone anywhere. Volume I (254 pages, 40 plates) was edited by André Roch. Volume II (239 pages, 56 plates) gives no editor's name. Among the corresponding editors are our members Mrs. Wade Martin and Bradford Washburn. The volumes are attractively printed and bound, and the illustrations, particularly in the 1947 annual, are superb.

The 1946 annual, doubtless because of lack of material from the rest of the world at that time, devotes 150-odd pages to the Alps. It includes also an account of a 1929 Caucasus expedition; a scientific article on avalanches and one on altitude physiology; some pages of notes and news; and Part One of an essay by Marcel Kurz on the chronology of altitude records attained by men on foot, from the classical period to the present. This very interesting study seems to be the result of enormous research. For the earlier ascents the evidence is analyzed, and for the later the published accounts are abstracted. According to Kurz the first 7000-metre summit to be reached was Shilla, in 1860. It is interesting to note that 68 years later the highest peak yet attained was only 102 metres higher, Pk. Lenin. Of course, long before that men had reached greater altitudes on mountains they failed to conquer. It would have been helpful if a bibliography could have been appended. One would like to read more about some of these ascents; but, as no references are given, to do so would, in many cases, mean a long hunt.

In the 1947 annual a full account of the Swiss Himalaya expedition of 1947 occupies about a third of the volume. This group made some fine first ascents, notably Kedarnath, Satopanth and Nanda Ghunti. Another third is taken up by the concluding part of the Kurz chronology of ascents and by a summary, also by Kurz, of Himalayan climbing, 1939-46. This includes a rather full account of the second American K2 expedition. The remaining third is occupied by brief notes on climbs in various ranges and miscellaneous news.

There is room for a review of mountain activities, either annual or more frequent, which is not the organ of a climbing club, and is international in its outlook. It is not yet clear whether this publication is going to fill the bill. These two volumes deal almost entirely with the Alps and the Himalaya, and the writers are mostly Swiss. Probably the difficulties of any beginning, and of these unfavorable

times, may be the cause of this limitation. The list of articles planned for the 1949 annual shows a wider range. These are very interesting volumes. There is every indication of a serious effort toward a high standard. The present reviewer makes no attempt to assess the quality of the work, or the accuracy of the statements. He merely reports that those articles which he read he liked.

NATHANIEL L. GOODRICH

Alpine Tragedy, by Charles Gos. Translated from the French by Malcolm Barnes. 282 pages, illustrations. New York: Charles Scribner's Sons, 1948. Price, $6.00.

Malcolm Barnes' spirited translation of Charles Gos' story of fatal mountain climbing accidents in the Alps is strangely fascinating. Though the accidents are very real, there is nothing macabre about the story of 24 separate disasters, many of them well known to climbers for three-quarters of a century and covering the period from Dr. Hamel to Alexander Burgener. The author's exhaustive research, shown by numerous footnotes, does not affect his piquant style.

Though some readers may object to the imaginary conversations of the main characters, to me these seem justified by the color and reality which they bring to the individual narratives. The stories emphasize what can happen even to the finest climbers through lack of technique, carelessness, or mischance. The misadventures have been selected from a great number and are varied. For instance, there is the death of the Knubel brothers in a fall through a cornice on the Lyskamm, the fate of unroped Julius Elliott on the Schreckhorn, the strange disappearance of the Count of Villanova on Mont Blanc, and the sensational adventure of courageous F. W. Hill on the Dent Blanche after his companions had fallen.

I know of no other book which, with similar thoroughness, restraint and absence of moral reflections, treats so effectively these famous and sobering misadventures. It is sad to have to add that Charles Gos died at Martigny on 14 April 1949.

R. H. BATES

Henriette d'Angeville au Mont-Blanc, by Émile Gaillard. 159 pp., numerous illustrations. Chambéry, 1947: Collection le Roc et l'Eau, Éditions Lire.

When Henriette d'Angeville gained the summit of Mont Blanc in 1838, little more than 40 years had passed since the first ascent by Dr. Paccard, and the adventure was regarded as a hazardous one, not to be confused with sport. It was a sensational thing to do. Marie Paradis, a peasant girl of Chamonix, had preceded Henriette, who was of a distinguished French family; but the attitudes of the two women clearly differed. For Marie, the ascent established a notoriety useful with tourists; for Henriette, ever afterwards known as the "Bride of Mont Blanc," it was the climax of a love of mountains for their own sake. That the love did not die was made evident by her ascent of the Signal de Retord on snowshoes in February 1852 and of the Oldenhorn, her 21st and last summit, in August 1863, when she was 69 years old. In the following year she made excursions to points from which Mont Blanc, the joy of her life, was visible. She died on 13 January 1871, in her 77th year.

Commandant Gaillard, in an entertaining book based on her diary and album, has allowed Mlle. d'Angeville to tell her own story. She sketched the principal events of the ascent and, on her return, commissioned the best Genevan artists of the time to render finished pictures. These delightful illustrations, here reproduced, surpass in graphic quality all earlier drawings of climbers and their equipment. There are vividness and honest reality in the faces of guides and porters, who are armed with halberd axes and chamois-horn alpenstocks and laden with such odd things as bellows and a cage of pigeons. One can but admire the intrepid woman's marvellous costume, complete with bloomers, bell-skirt and boa. Yet one sees that she leaped crevasses lightly, walked erect on crests of ice, and deserved the tribute of her guides, who lifted her above the summit that she might be higher than Mont Blanc.

J. M. THORINGTON

VARIOUS NOTES

United States: New Climbs

Further Firsts in Cashmere Crags. Data supplied by Fred Beckey complement the article by Ralph Widrig in this issue:

Dragon Tooth (nr. The Mole), 22 May 1948: Ralph Widrig, Fred Beckey. Five pitons for aid to climb overhanging wall; then up high-angle slab. Sitting on the summit "very precarious."

Flake Tower (Mt. Temple ridge), 31 May 1948: Ralph Widrig, P. Schoening. Two pitons for safety.

Three Musketeers, 14 August 1948: J. Schwabland, F. Melberg, F. Beckey. Crack (layback) to base of three 50-ft. granite monoliths, which are crackless but so closely spaced that climbers were able to stem the gaps—"rather spectacular."

Comet Spire and the Meteor (E. end of Mt. Temple ridge), 29 August 1948: F. Beckey, P. Schoening, Ralph Widrig. Meteor "very difficult": two shoulder stands, pitons, palm-pressure up high-angle slab. Entire summit overhangs.

Yellowjacket Tower and the Hook (above Icicle Cr.), 1 September 1948: P. Schoening, H. Staley, F. Beckey. "The hornets made us miserable on the former . . . The latter required pitons, expansion bolt and rope-throwing."

The Sentry (above Snow Lakes), 4 September 1948: J. Schwabland, F. Beckey. Two shoulder stands, pitons (direct aid), lasso to overcome final 15 ft.

Gremlin Peak and Rocket Peak (E. McClellan Peak ridge), 5 September 1948: J. Schwabland, F. Beckey. The ascent of Rocket, effected after climbs on Gremlin and some lesser towers, evidently brought the day's activities to a climax: "After a long S.-face ascent they worked to an exposed niche 50 ft. below the summit. Here Beckey gained a sloping ledge after a number of attempts from a very precarious shoulder stand. On the ensuing pitch a contraction bolt had to be used for aid. The stance was not only very awkward for drilling, but very exposed . . . The lack of piton cracks on the summit block make the ascent troublesome."

Black Pyramid (above Nada Lake), 6 September 1948: J. Schwabland, F. Beckey. "A long, enjoyable ridge climb."

The Comb and the Duolith, 19 September 1948: F. Beckey, Ralph Widrig. On the latter, five pitons were used for aid.

Enchantment Peak (above Enchantment Lakes), 20 September 1948: F. Beckey, Ralph Widrig.

The Boxtop (nr. W. end of Mt. Temple ridge), 25 September 1948: F. Beckey, P. Schoening (others of a large party "admirably sacrificed their ambitions" in order to let these two reach the top). Overhangs made route-finding exceptionally difficult: the N. and E. faces were ruled out; and, after hours of climbing, nearly every semblance of a route on the S. and W. faces was found to run into a blind alley. "Deep vertical fissures, useless for pitons, and impossible to climb by any technique, were tried at numerous points on the lower walls. Finally a piton traverse led to a wall that had enough holds for 50 ft. Then a bulging overhang demanded direct aid for 12 ft.—a project undertaken by Beckey. The next lead proved more feasible, but then a 40-ft. overhang blocked progress." Now, a traverse to the E. having failed, other members of the party withdrew, to let Beckey and Schoening, "who were ahead at the moment," proceed during the time still available. "Schoening climbed a severe 20-ft. pitch to examine the horrible overhang and, to his amazement, found a 'hole' extending through the narrow peak." On the opposite N. wall there was a route leading to a ledge above the overhang. Flawless walls again seemed about to end the climb; but a traverse to the E. on a narrow, exposed ledge brought the two to a vertical 50-ft. fissure where they were able to fix a piton in an iced niche. "A freezing wind made climbing miserable—the others were now huddled about a fire far below." The crack, despite exposure, went well. "Schoening inched his way up the last severe problem and reached the very exposed and narrow summit crest. A 40-ft. straddle *à cheval,* made additionally precarious by a blasting wind, led to the summit. Rappels and a tension traverse quickly facilitated the descent."

Castle Rock (Tumwater Canyon), 10 October 1948: F. Beckey, J. Schwabland, W. Grande. S. face: 13 pitons for safety.

Herronhead Tower and the Dart, 10 April 1949: P. Schoening, D. Wilde. Class 6.

Another note from the same source reports the existence of impressive towers S. of Enchantment Lakes: "Some of them, such as the Prong, the Flagpole, the Nightmare Needles and the Knitting

Needle Spires, appear impossible. If in later seasons they prove to be climbable, even 'illegitimately,' these certainly will be spectacular ascents. North of the Mole, a 1000-ft. granite monolith with sheer sides, known as 'The Great Blockhouse,' was subjected to a cursory reconnaissance which convinced the climbers that, if the ascent was at all possible, it would take days of hardware climbing. Unquestionably it is one of the most difficult peaks in the Crags—and the United States."

Baker Rock, West Virginia. On the slopes of Elkhorn Ridge, a few miles E. of Petersburg, W. Va., erosion has exposed a remarkable formation of cliffs and pinnacles, locally known as Baker Rock. This quartzite expanse for many years excited the curiosity of Washington climbers on their way to Seneca Rock, Nelson Rock and Hellhole, but these other objectives always received prior consideration. Then, on 17 May 1946, Don Hubbard and Sam Moore made the first serious investigation of Baker Rock. They climbed three of the lower spires and the S. peak. On 6 September 1948 these rocks received some further attention. Jane Showacre, Mary Neilan and Arnold Wexler attempted a route up the S. chimney, but were turned back by the difficulties of the upper section. On 13 November 1948 Don Hubbard and Dick Goldman traversed the ridge N. of the main gap. On the next day the two pioneered an elegant route up the main face just below the highest point. It took four pitons, and 40 vertical ft., for them to reach the first satisfactory belaying point. During the same afternoon Arthur Lembeck, Harold Drewes and Arnold Wexler returned to the S. chimney. Back-and-knee technique took the party up 125 ft. to a point where the walls of the chimney opened wide into two isolated peaks. Choosing the southern pinnacle, the party traversed to the sheer front face and then ascended to the summit, some 200 ft. above the base. On top there was hardly room for two people.

Baker Rock has great possibilities and certainly ranks in the class with Seneca Rock, Nelson Rock and Champe Rock.

A. W.

United States: Activities of the Clubs

Guidebook for Mountains of the Northwest. The A.A.C. looks forward to completion in the near future of the new *Climber's*

Guide to the Cascade and Olympic Mountains. In about 275 pages, the volume will describe approximately 1000 routes on some 500 peaks. It will include 20 maps, 57 line cuts and eight full-page half-tones. In format, it will be the same as the *Climber's Guide to the Rocky Mountains of Canada.* The price for general distribution will be $3.50.

A.A.C. in Denver. On 5 May 1949 the Colorado members of the A.A.C., with guests from the Colorado Mountain Club, gathered for dinner at the University Club in Denver, in honor of Mr. and Mrs. Walter Wood, who stopped off for a day on their way to Alaska. Those who had long looked forward to showing the West to the Woods, and the Woods to the West, found themselves far more successful in the latter undertaking, for a heavy rain fell all day and not a mountain was to be seen. Forty people attended the dinner and enjoyed "Operation Snow Cornice," the film of the Wood expedition to Alaska in 1948.

The Colorado Section of the A.A.C. is not organized in any formal sense; it has no fixed schedule of meetings, no dues, no official projects. The 30 members, however, are a congenial group and often meet informally. Many of them are closely involved in the affairs of the Colorado Mountain Club, of which Henry Buchtel is president and Evelyn Runnette secretary. A project in which our own members are taking an active interest is the new C.M.C. guidebook to the Colorado Rockies.

ELIZABETH S. COWLES

Mountaineers. At the time of going to press, we have unfortunately received no summary of the year 1948 from the Mountaineers, Inc. On the basis of evidence to be found in other communications, one surmises that excellent proof of continued activity is to be found on numerous summits in the Cascades.*

Mazamas. The Mazamas, of Portland, Ore., held their 55th Annual Outing in 1948, from July 25th to August 8th, at Park Creek Pass in the Chelan Mountains of Washington. Inclement weather hampered the mountaineering program somewhat, but the follow-

* See, for example, pp. 248-55 and 341-3 above.

ing peaks were successfully climbed: Booker (thrice), Logan (twice), Boston, Sahale and Buckner. Eleven peaks of the Northwest were ascended, some of them more than once, in the course of official club excursions during the summer. In addition, there was the usual schedule of practice climbs.

The Mazamas, in common with other similar organizations, are interested in research and conservation as well as in mountaineering. For the past three years, the principal research project has been the accumulation of data on the age of trees growing on the modern moraines of Mt. Hood, particularly those of Eliot Glacier. The purpose is to establish the dates of the most recent advances of the ice. This study was stimulated by the late Dr. François Matthes and has been carried on largely by Mr. Kenneth N. Phillips, of Portland, and Dr. Donald B. Lawrence, now of the Department of Botany, University of Minnesota.

For some years the club has been cooperating actively with other local groups in the establishment of a 5500-acre Municipal Forest Park in the hills adjoining Portland on the N.W. Since September 1944 "local walks" expeditions of the Mazamas have planted some 10,000 baby trees and opened six miles of hiking trails.

F. D. Ayres

Sierra Club. Ever since the Sierra Club was founded in 1892 by John Muir (later a charter member of the A.A.C.) and others, its principal purpose has been to encourage conservation of our natural scenic and mountain resources.* Thus, in the last year or so, the club has been extremely active in the defence of the San Gorgonio Primitive Area of California, the Cloud Peak Primitive Area of Wyoming, Jackson Hole National Monument, Glacier National Park and the great rain forests of the Olympic National Park —to name some of the major problems that relate particularly to the interests of the A.A.C.

John Muir early realized that, to obtain effective conservation, the club should arrange trips and publications which would acquaint as many people as possible with the beauty of the mountains and

* The rapidly growing Sierra Club, with 6622 members on 1 March 1949, has become the largest organization of its kind in the United States. Next in point of numbers is the Appalachian Mountain Club, with 4884 members on April 1st.—H. S. H., Jr.

with the facts concerning the need for protection. At his request, Will Colby (A.A.C.) organized in 1901 the first of the annual "High Trips." These trips, which took 200 people on a roving pack trip through the high mountains each summer, continued under Colby's direction every year (except 1918) until the end of 1936, when he turned the leadership over to me. In 1948 the 44th High Trip, led by Dave Brower (A.A.C.), covered the central portion of Kings Canyon National Park and the N.E. portion of Sequoia National Park.

In order that more people may be able to enjoy the mountains without placing too heavy a load on the mountain meadows, the size of the High Trip has been cut from 200 to 125, and a "Base Camp" trip was started in 1940 under the leadership of Oliver Kehrlein. The 1948 camp was at Vidette Meadows, at the base of the Kings-Kern Divide in Kings Canyon National Park. Packing in about ten miles and then having the pack stock return to the roadhead made possible over 3000 man-days of enjoyment without a single animal-day of grazing.

A saddle trip enabled about 20 people to enjoy high mountain country with all the pleasure that use of animals brings. Four burro trips—20 people and 10 burros on each—made a circuit from Piute Pass in Inyo National Forest through fine country of the Sierra National Forest and the northern portion of Kings Canyon National Park and back by Bishop Pass into Inyo National Forest. These trips are to teach participants how to handle animals in small parties of their own.

The more rugged knapsack trips teach the technique of lightweight travel. The Sierra trip covered the Cathedral Range of Yosemite National Park and the Minaret region of Sierra National Forest. In accordance with the club's policy to have another knapsack trip in the more remote wildernesses of the continent, a second party in 1948 spent two weeks in the Olympic National Park.

Apart from trips officially sponsored by the Sierra Club, a large group of expert climbers organized their own expedition into the Purcell Range of British Columbia. Bugaboo Spire was ascended on August 3rd; Pigeon Spire, the lower summit of Marmolata and several peaks of the Crescent Spires on the 4th. On the latter day a second party on Bugaboo Spire encountered an extremely severe and

sudden lightning storm, the consequences of which are described elsewhere.*

R. M. LEONARD

Stanford. The Stanford Alpine Club has 50 members, half of whom are active. Four week ends a year, the club sponsors climbs in Yosemite Valley—a rock climber's paradise. Several week ends are spent at Pinnacles National Monument or Castle Crags State Park. During the summer of 1948 members joined trips to Canada and the Tetons; in October three made the third ascent of Yosemite's sensational W. Arrowhead Chimney; and on Thanksgiving Day seven made two minor first ascents in the Castle Crags. At present the club is working on a film of the climb of Lower Cathedral Spire in Yosemite.

About 25 Sundays are devoted to practice climbs on local rocks, where beginners are trained toward the proficiency required in Yosemite. Each member must pass tests to attain status as "Qualified" or "Leader," and these classifications serve to control the make-up of climbing parties.

RUPERT GATES AND DAVID HARRAH

Colorado Mountain Club. For the Colorado Mountain Club 1948 was a busy year, though not spectacular. Trips sponsored by the Denver Group, varying from picnics and easy one-day walks to climbs of 14,000-ft. peaks, produced some 2300 *safe* man-days in the Colorado mountains from April through October. There were 29 one-day trips and 22 over night. In addition, groups in Boulder, Fort Collins, Colorado Springs and Walsenburg, and junior groups in Denver and Colorado College, sponsored trips about every two weeks.

The so-called Annual Summer Outing was held in the Gore Range, with about 60 in attendance for a week. It was decided to go in from the W. Exploration from that side, however, led to the conclusion that the other (E.) is easier of access and offers more climbing. Nevertheless, despite poor weather and the distances from camp, some interesting climbs were accomplished, including a few first ascents. What amounted to a second "outing" developed

* See pp. 289-90 above.—*Ed.*

from a scheduled "long week-end trip": 60 people camped in the Crestone area for six days over Labor Day and climbed all the 14,000-ft. peaks in the group.

Many members spent every week end from November to May in the mountains on skis or snowshoes. Snowshoeing has regained popularity with some who like to be out in winter but do not ski. The skiing "die-hards" participated on June 13th in a "Sunrise Slalom" on Trail Ridge in Rocky Mountain National Park. Ski climbs of some of the 14,000-ft. peaks have also been made, and this spring a ski ascent of Castle Peak (14,259 ft.) in the Elk Mountains marked the highly enjoyable "Winter Outing" in Montezuma Basin, S. of Aspen.

An active conservation committee has watched pending legislation, and for three years the club has devoted one Sunday in spring to tree-planting, with the cooperation of the U. S. Forest Service. In June 1948 some 150 people planted 5000-6000 small lodgepole pines on the old "Mammoth Burn" near Tolland. This work will be continued.

The club participated in ceremonies marking the formal naming of Mt. Wilcox, a peak in the Georgetown area: a party climbed the peak and carried on two-way radio communication with the group in the valley which included the Governor and the Director of the Board on Geographic Names.

Among recent visitors who have lectured before the club are Bradford Washburn and Maynard Miller; and Walter Wood has shown his "Snow Cornice" pictures to a small group, mainly of A.A.C. members in Denver. André Roch, another recent visitor, showed pictures of his Himalayan expeditions.

Having long realized the need for revision of *Fourteen Thousand Feet,* which contains climbing data on the high peaks in the state, the club is now earnestly applying itself to the preparation of a fuller guidebook to the Colorado mountains, with data also on the many miles of trails and on the peaks that rise to less than 14,000 ft. but still are interesting. It is hoped that this new guidebook may be ready for publication before the summer of 1950.

EVELYN RUNNETTE

Iowa Mountaineers. The Iowa Mountaineers of the State University of Iowa enjoyed in 1948 their most successful year. Founded

in 1940, the club now has a membership of 750 and ranks as possibly the largest college mountaineering club in the country. It is reason for thankfulness that, despite the inevitable academic turnover, which annually reduces the number of experienced members, the club has been able to maintain its nine-year safety record unblemished.

Besides releasing its 1948 journal and obtaining a spacious club house in the center of the campus, the club during the year scheduled numerous week-end outings for practice climbing and sponsored three major trips.

During the 14-day Christmas-New Year vacation period (1947-48), eight members drove over 5000 miles to climb Orizaba and Popocatepetl, and attempt Ixtaccihuatl. The first was ascended in a blinding snowstorm, with the rocks glazed. Popocatepetl was ascended 48 hours later, in clear weather but with a very strong, bitterly cold wind blowing. News of a devastating blizzard in the Middle West required cancellation of the third climb.

The Annual Summer Outing in the Wind River Range attracted 48 members. A base camp at the foot of Gannett Glacier was occupied from August 10th through 20th. Joe Stettner served as chief guide; other guides were John Speck, Ken Jones, Erich Farber and John Ebert. There was a record number of ascents: Gannett (38 in two groups via the Gooseneck route); Koven (17 in two groups, traversing the peak simultaneously, N.E.-S.W. and S.W.-N.E.); Rampart-Koven traverse, N.E.-S.W. (four members); Rampart-Bastian traverse, S.-W. (12 members); Sunbeam-unnamed peak-E. Sentinel traverse (eight members); W. Sentinel (13 in two groups, traversing from E. to S.); Warren-Doublet-Dinwoody traverse (seven members); Dinwoody Peak (15 in two groups via N. ridge); Chimney Rock (seven members); Woodrow Wilson (eight members). Seven crossed the divide by the N. col of Dinwoody Peak to drop down into the Titcomb Lakes basin and climb Sacagewea and Fremont from the steep snow slope to the head of Bull Lake Glacier, and 25 in two groups hiked to Klondike Lake.

Devils Tower, Wyoming, attracted 16 club climbers. The party reached the summit, thereby completing the seventh ascent and equalling the number of climbers on all six previous ascents. Joe Stettner led the first rope on August 22nd. To enjoy the adventure

of a night on top, the group hauled up sleeping bags, food and water. The tower was vacated in three hours on the following morning.

S. J. EBERT

Chicago Mountaineering Club. During 1948 the Chicago Mountaineering Club enjoyed a series of fine monthly meetings from January to June and from October to December, and held a number of local outings. The favorite local climbing spot is Devils Lake State Park, Wis. Forty-three persons attended the Annual Summer Outing, from July 8th to August 1st, in Grand Teton National Park. The outing chairman was John Speck. Among the peaks climbed were Owen, Nez Perce, Teewinot, Symmetry Spire and Grand, South and Middle Tetons. The outing was marred by accident.*

E. L. JOHNSON

Appalachian Mountain Club. In 1948 the Appalachian Mountain Club continued its usual round of lectures, walks, ski trips, rock climbs, white water canoeing, etc. The longest trip scheduled during the year was an excursion to Glacier National Park. This was a pack-train trip, in the course of which a large part of the W. and N. sections of the park were visited. Lack of time defeated an attempt on Mt. Cleveland, but ascents were made of Goat Haunt Mountain, Bear Mountain and Mt. Chapman.

August Camp was held for four weeks in Keene, N. Y. Thus, for the second successive season members had an opportunity to climb in the Adirondacks. Considerably more climbing was accomplished in 1948 than in 1947, as the weather was much more favorable—cooler and more conducive to strenuous activity.

The club has made several notable additions to its system of huts in the White Mountains. The Lakes-of-the-Clouds Hut on Mt. Washington was increased in capacity from 75 to 90, and the dining and galley spaces enlarged to accommodate the entire group at one sitting, instead of two or three. Pinkham Notch Hut was also increased in capacity, from 72 to 100; upon completion of the work, it will accommodate 125. The public rooms and washrooms were also expanded and improved. A new hut was established in

* See pp. 299-300 above.—*Ed.*

Evans Notch, at the E. end of the chain, practically on the Maine border. Use of a former guard station was obtained from the U.S. Forest Service. Augmented by several tents for sleeping quarters, this hut proved very successful and appears to be a popular addition to the system.

K. A. HENDERSON

Harvard. If one is to judge by performance, past, present and (probable) future, the Harvard Mountaineering Club still occupies a stellar position in the collegiate mountaineering scene. The club has successfully adjusted itself to post-war conditions; and it is currently engaged in training young non-veteran members and trying to work them into the group of more experienced mountaineers who were trained during and immediately after the war. Particular emphasis has been laid on safety.

The H.M.C. has run or participated in four major expeditions on the North American continent, and any number of members climbed actively in the better known districts. To the writer's knowledge, in the past two years, the H.M.C. has made 36 first ascents, largely in the Coast Range of British Columbia; a reconnaissance under arduous conditions of Mt. Vancouver, highest unclimbed peak on the continent; and a number of new routes. Much of this has been done only with the cooperation of other groups, particularly the Arctic Institute of North America and the Seattle Mountaineers.

This year the H.M.C. celebrates its silver anniversary. With begoggled eyes it views the next 25 years in the same spirit that has brought it where it is today.

F. P. MAGOUN, III

Yale. The second year of the Yale Mountaineering Club brought a considerable increase in interest and activity. Members regularly practised rock climbing on Mt. Carmel, ten miles from the university; and a group of ten, in the spring of 1948, visited Mt. Washington. Despite bad weather, this party climbed six steep, ice-choked gullies of Huntington Ravine, including the very difficult Pinnacle Gully (sixth ascent).

During the summer four members climbed Rainier and another peak in the Cascades, and individuals joined parties both in Wash-

ington and in Colorado. Two members were so fortunate as to participate in summer expeditions. William Fix, president for 1947-48, accompanied the H.M.C. party to the Coast Range of British Columbia. Melvin Marcus went with Maynard Miller to do research on the Juneau Ice Field.

The ensuing winter saw a considerable development of interest in winter ski mountaineering. Four trips were made to the Adirondacks, and seven peaks were ascended, one of them for the first time in winter. During the winter the club also acquired a club room and the loan of a mountaineering library. It has now undertaken to revise its constitution, in the hope of achieving a closer knit, more active and more responsible undergraduate membership, and of stimulating active alumni support. Another intention is to increase the emphasis on safety.

R. G. MERRITT

Princeton. In the fall of 1948 a small group of climbers in the Princeton Outing Club felt the need of a separate mountaineering club, recognized by the other clubs as a distinct organization. Throughout the fall, on week ends, they exploited the rock of the Delaware Water Gap; and between terms a party of nine, led by Jock Lewis, drove to Mt. Washington, to gain some experience in winter mountaineering.* The Outing Club, which has been extraordinarily cooperative, encouraged and financed the trip; and the H.M.C., which has shown cordial interest, generously shared its cabin.

Having found that there was sufficient interest in Princeton, the club then drew up a constitution and was granted a charter by the university. To ensure continuity of policy, it established an advisory council with Walter Wood as head. The club is starting slowly and cautiously, because only a few men have climbed before, and plans to defer the election of officers until the 1949 climbing season is over.

PETER BROWN

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* The *Princeton Alumni Weekly* of 29 April 1949 includes in '48 Class Notes a report of the ascent of the Grand Teton in March by Jock Lewis, his brother Ted and Paul Petzoldt: "perfect balmy spring days . . . no difficulties whatsoever . . . a wonderful ski down the last day."—*Ed.*

Alaska

Mt. Shand. The peak which rises to about 13,000 ft. ten miles S.E. of Mt. Hayes in the Alaska Range has been officially named Mt. Shand by the Board on Geographic Names. Temporarily called Mt. Bagley, the peak was climbed on 12 August 1941 by the late William Shand, Jr., with Benjamin G. Ferris, Jr., shortly after their participation in the first ascent of Mt. Hayes.[1]

H. S. H., Jr.

Cosmic Rays on McKinley. Results of scientific experiments carried out in the course of "Operation White Tower" are described in *The Physical Review* for 15 June 1948.* The title of the article is "Cosmic-Ray Investigations on Mt. McKinley"; and the authors are Thomas D. Carr, Marcel Schein and Ian Barbour, of the Department of Physics, University of Chicago. In closing, they pay special tribute to Bradford Washburn and H. T. Victoreen.

Ascent of McKinley, 1948. On 13 July 1948 five students from the University of Alaska, led by Walter Gonnason, climbed the S. peak of Mt. McKinley. They left Fairbanks or McKinley Park Station (the account is not clear) on June 18th, crossed to the Muldrow Glacier in five days, and by July 1st were firmly established at 11,000 ft. Deep snow hampered the party on Karstens Ridge, and a severe storm with high winds and low temperature buffeted them near Browne Tower. A final camp was made at Denali Pass at 18,150 ft. From here the party made the ascent on July 13th. The temperature on the summit was recorded as 21° below zero, and the wind was estimated at 40 miles an hour.

It is worth noting that this party benefited from equipment cached at McGonagall Pass and Denali Pass by the Boston Museum expedition of 1947, for the stoves of the Gonnason party would not operate at 18,000 ft. Two Fahrenheit thermometers left in 1947 were examined. The one at McGonagall Pass, well covered by snow,

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[1] See B. G. Ferris, Jr., "A New Ascent in the Hayes Range," *A.A.J.*, IV (1942), 335-40, and "In Memoriam: William Shand, Jr.," *A.A.J.*, VI (1947), 423-4.

* See Bradford Washburn, "Operation White Tower," *A.A.J.*, VII (April 1948), 40-58. Results of this successful cosmic-ray study appear likely to lead to further observations in the same area.

recorded a minimum of 29.5° below zero, while the one at Denali Pass had reached 67° below zero.†

Alaska-Yukon Border

Success on Mt. Vancouver. On 5 July 1949 four climbers reached the summit of Mt. Vancouver (15,720 ft.), which had been the highest unclimbed peak in North America. The party consisted of Noel Odell, William R. Hainsworth, Robert S. McCarter and Alan Bruce-Robertson, members of the expedition sponsored by the Arctic Institute of North America and led by Walter A. Wood. We shall hope to publish an account of the ascent in our next issue.*

Canada

Rocky Mountains of Canada. The following ascents were made in 1948 by Mr. and Mrs. E. Cromwell:

Mt. Hurd (9275 ft.), first ascent. From the road between Field and Leanchoil, by steep goat trail up hard-baked and almost vertical gully, to open meadows above timberline and just below steep cliffs of W. face; thence contouring to S. face over shale and boulders for about one mile to big gully splitting S. face; up this gully (easy rock climbing) to westernmost and highest of three small summits. Ascent five hours. Rope not used.

Unnamed peak ("Andromache": 9800 ft. by contour, above the highway just N. of Mt. Hector and Hector Creek), first ascent. From No-See-Um Creek, immediately N. of the objective, via shale and boulder slopes to 9000 ft.; thence up N. ridge to upper slopes of Molar Glacier, which lies on N.E. side of the peak; over glacier (rope) in southerly direction to summit rocks. Ascent five hours. Miss C. Cromwell accompanied Mr. and Mrs. Cromwell.

Unnamed peak (about equal to the last in height, and half a mile to the S.E.), first ascent. From the highway to No-See-Um Creek to its source, climbing up a cliffy waterfall on goat trails to bench lake at 8000 ft.; thence S. across glaciated rocks to Molar

† Cf. *A.A.J.*, VII (April 1948), 48 n. and 57 n.

* For an account of the reconnaissance in 1948, see F. P. Magoun, III, "Mount Vancouver's North Ridge," *Appalachia,* XXVII (June 1949), 321-33. Cf. also "Glacier Expedition," *Life,* 11 July 1949, pp. 47-9.

Glacier and up a steep icy wall (1000 ft.) to col between "Andromache" and objective; thence S. to summit in half an hour's walking over easy boulders. Ascent five and a half hours.

Mt. Wilson (10,631 ft.), S.-N. traverse. From Saskatchewan Forks up long steep gully to notch in S. ridge. The Wilson Glacier once descended to this notch, but it has now greatly receded, and 1000 ft. of altitude are lost in reaching a deep glaciated trough before ascending icefall to upper névé just E. of main N.-S. ridge. The subsidiary S. peak is traversed to the main peak. Ascent six hours. Descent of the steep N. ridge requires stepcutting. From the N. end of the névé it is possible to swing S. and regain the route of the ascent. Under fresh snow the concealed crevasses make it desirable to have three on the rope.

J. M. T.

South America

Patagonia. During the early months of 1949, Maynard M. Miller and Robert L. Nichols participated with three Argentine geologists in a glaciological and geomorphological expedition to the Argentine Lake District. The party left Buenos Aires in the middle of February and journeyed southward to Lago Argentino by truck and jeep. Later, with two of the Argentine geologists, Miller travelled north to Tronador, whence they headed for Buenos Aires again late in April. The undertaking was under the joint auspices of the Argentine Museum of Natural Science in Buenos Aires and the American Geographical Society.

Aconcagua. On 19 February 1949 Lieutenant William D. Hackett reached the summit of Aconcagua in company with an Argentine officer, Lieutenant Jorge Mottet. Hackett thus became the first to have ascended both McKinley and Aconcagua. The five-man climbing party, which was supported by six Argentine soldiers and a civilian, left Puente del Inca with 19 mules on the 15th; camped at Plaza de Mulas (4200 m.) on the 16th and 17th; and arrived at Refugio Plantemura (6400 m.) at 3.20 P.M. on the 18th. On the following day, which was clear and cold (—27° C.), Hackett and Mottet left camp at 10.00 A.M. and attained the summit (6960 m.), having climbed the last few feet together, at 6.00 P.M. They reached Plaza de Mulas about midnight.

Sierra Nevada de Santa Marta. It is reported that in February 1949 Wallace and Bruce Adams climbed El Guardian by a new route on the S.W. ridge.

Eruption in Colombia. Seventeen students were reported killed in a sudden eruption near the summit of the 15,416-foot volcano Purace (2° 20′ N., 76° 40′ W.) on 26 May 1949. The volcano had been inactive for 16 years. Two other students, who were behind the main party, said that their companions were buried under a lava flow in a matter of seconds or killed by showers of falling rocks and ash.

Europe

The Untrodden Route. The Alpine Club (London) has lost four members whose names are known to all lovers of mountain literature. H. E. G. Tyndale, whose last book, *Mountain Paths,* appeared only recently, died at Winchester on 3 August 1948, while the November issue of the *Alpine Journal* was being prepared for the press. He has been succeeded as Editor by Professor T. Graham Brown. On 22 November 1948 A. E. W. Mason died in London. Of his many works, *A Romance of Wastdale* (1895) and *Running Water* (1907) will be particularly remembered by those who climb. Also in London, on 13 December 1948, Michael Roberts succumbed to illness, at the age of 46. In his *Poems* (1936) one finds frequent reflections of his experience of mountaineering; one recalls, for example, "St. Gervais," "Val d'Isère" and "Elegy for the Fallen Climbers." Finally, as we go to press, we learn of the illness and death on 27 June 1949, just over a week before his 49th birthday, of Frank Smythe. So numerous were his climbs in the Alps, Himalaya and Rockies, and so well known are his records of them in words and in pictures, that we shall do no more than recall that our journal of January 1949 included reviews of three of his recent books, in addition to one of his memorable photographs as frontispiece.

Even the briefest chronicle of these losses, it must be added, brings to mind their magnitude.

A Climber's Tour from Klosters to Zermatt. To those who wish to visit some relatively little known sections of Switzerland, and who

eschew the centrist's approach to climbing, the following itinerary is offered as of possible interest. It is based on a trip made with William Harrover, of the Sierra Club, in the summer of 1948; and it includes both what was actually accomplished and what was only planned. We did reach Zermatt on foot from Klosters, but a combination of miserable weather and sundry weaknesses of the flesh made our trip in fact somewhat different from our trip in theory. What follows offers many possibilities of improvement or amendment according to one's inclinations. May those blessed equally with sound limbs and good weather make the most of it!

1st day: Klosters to Silvrettahütte. A pleasant afternoon's walk via Monbiel, Novai and the Sardasca Alp.[1]

2nd day: Silvrettahütte to Vereinahaus. The preferable route—but a long day—is up the Silvrettagletscher to the Silvrettajoch, and thence S. and W. over La Cudera and the Vadret dellas Maisas (which can also be reached more directly from the hut by the Verstanklator) to the Vernelasattel on the S. ridge of the Verstanklahorn. From here, a descent is made directly to the Vernelatal, at the distant mouth of which is the Vereinahaus. An easier way is to return from the Silvrettahütte to Novai and proceed thence up the carriage road to the Vereinahaus. This walk takes only an afternoon, leaving a morning for the Silvrettahorn or one of the other easy peaks at the head of the Silvrettagletscher.

3rd day: Vereinahaus to Grialetschhütte. No climbing, but a good day's walk via the Süsertal, Flessjoch and Val Grialetsch.

4th day: Grialetschhütte to Keschhütte. For the energetic, the preferable route lies over the Vadret da Grialetsch to the depression between the Piz Grialetsch and the Piz Vadret (either of which can be climbed *en passant*), and thence down the Vadret da Vallorgia to the Alp Fontauna and up the Val Fontauna to the hut. An easier way—hardly more than a half-day—is via Dürrboden, the Scalettajoch (contouring around to the pass from the hut is not recommended) and a good path which forks to the right just beyond the pass and contours easily along the side of the Val Fontauna to the Keschhütte.

5th day: Keschhütte to Bergün. The ascent of the Piz Kesch

[1] All geographical references are to the *Topographischer Atlas der Schweiz*, the sheets of which are the indispensable vade mecum of the perambulating traveller in the Swiss Alps.

(two or three hours from the hut and easy) is a "must" for the view, but Bergün can still be reached by the Val Tuors by noon.[2] Bergün, an attractive little village, tempts one to linger. Also, it is a convenient point from which to detour for a visit to the Bernina, Morteratsch station being only two hours away by train. Those in a hurry, however, could well go on to the Aelahütte the same afternoon.

6th day: Bergün to Savognin, via the Aelahütte, the Pass d'Aela, the Val d'Err and Tinzen. An easy but enjoyable day through lovely country. Weather permitting, an extra day for some climbing on the Piz d'Aela, Tinzenhorn or Piz Michel would be rewarding. These three peaks constitute the westernmost geological outpost of the Dolomites and offer a wide variety of rock climbs.

7th day: Savognin to Splügen, via the Val Nandro, Schmorrasjoch, Ausser Ferrara and Rofflaschlucht. Another day of easy walking through typical high summer pasture country—a gentler and opener aspect of the Alps than is generally found in the Oberland or the Valais.

8th day: Splügen to Zapporthütte, via Hinterrhein. Although the route lies along the road to a point just beyond Hinterrhein, this walk is still worth while, for the path to the hut makes up in interest what the road lacks. The map's contour lines fail to give a true impression of the spectacular gorge at the mouth of the Rhine, with the hut perched high above. Those wishing to avoid the road, by taking a direct route over the mountains from Ausser Ferrara to the hut, should note that to reach the hut from the S. side of the Rhine would not be easy and, in any event, would involve a long detour S. and W. around the gorge.

9th day: Zapporthütte to Olivone, via the Rheinwaldhorn. The traverse of the Rheinwaldhorn is an easy snow climb, but is rewarded with a fine view. The descent from the Rifugio Adula to Olivone is made preferably by the Val Carasina.

10th day: Olivone to All' Acqua, via Val Piora and Airolo. A long day's walk, but quite feasible. One follows the Lukmanierpass road to a point a mile or so beyond Acquacalda, and then strikes across country (no trail) for the Pizzo Columbe, which is flanked

[2] The itinerary to this point would make a perfect ski tour. Indeed, the country between Klosters and Bergün is probably more frequented in winter than in summer.

by two passes, either of which one can use to gain the Val Piora. One can best reach Airolo from Lago Ritom by following the road to the head of the funicular and then making a straight line for the town across the mountainside, without attempting to follow a path. A dirt road leads up the Val Bedretto to All' Acqua. Airolo is the best point from which to make a detour to the sunny South: Locarno and Lugano are only about two hours away by train, and both offer perfect surroundings for a day or so of loafing.

11th day: All' Acqua to Binn. The better route is up the Griesgletscher and over the Blindenhorn and Hohsandhorn to the Binntal. Alternately, one can cross the Nufenenpass, at the head of the Val Bedretto, thence descend to Ulrichen, and follow the Rhone Valley to Ernen, where the postroad to Binn starts.

12th day: Binn to Simplon village, via the Saflischpass and Berisal. Locating the pass requires strict attention to the map; and the descent to the Simplon road should be made via Rosswald, and not by Im Stafel. The latter route, on the map, is ostensibly the more direct.

13th day: Simplon village to Saas Fee, via the Fletschhorn. Primitive accommodations can be had at the Rossbodenalp, 1500 ft. above the village, which is 8000 ft. below the summit of the Fletschhorn; and most climbers will probably conclude that the discomforts of the Rossbodenalp are outweighed by the gain in altitude. A pleasanter though somewhat longer route to the summit than the official one (via the N. E. ridge, the Breitlaub) is by the Griesserengletscher, Rossbodenjoch and Sengkuppe. The descent to Saas Fee is by way of the Weissmieshütte.

14th day: Saas Fee to Zermatt, as one pleases.

No allowance has been made for weather, weakness or wanderings from the straight and narrow path. We took 21 days, including detours to the Piz Bernina and to Lugano and several days of inactivity due to the weather. A margin of 50% in the time allotted for a climbing tour is safest, especially in the Alps, where the distractions are plentiful and tempting.

As is evident, this itinerary offers only the quieter satisfactions of the Alps. Those seeking the excitement of great climbs will not find them here. But ambling day after day through village, pasture and valley, and crossing pass and peak, can bring one close to the land and the people, and leave a more vivid impression of a way

of life that is far removed from the normal routine of civilized living than can a stay at some great climbing center.

DONALD W. BROWN

ASIA

Americans back from Nepal. The Nepal expedition led by Dr. Dillon Ripley, of New Haven, and sponsored by Yale University, the National Geographic Society and the Smithsonian Institution, returned to this country with some fine long-range photographs of Everest from the S.E. At its nearest approach to the mountain, the expedition was 60 miles away.

British in Nepal. An announcement from the Himalayan Committee of the Alpine Club states that a small expedition is being permitted to visit Nepal in 1949, under the leadership of H. W. Tilman. It was planned that the party should include also Peter Lloyd, O. Polunin (botanist) and H. Scott (biologist).

Swiss around Kangchenjunga. A Swiss expedition to the region of Kangchenjunga was reported from India in April 1949. Members were Alfred Sutter, René Dittert, Mme. Annalies Lohner and Dr. Wyss-Dunant, with the guides Adolf Rubi and Jacob Pargetzi. Professor R. N. Rahul acted as liaison officer. Several of the party were members of the Swiss expedition to Garhwal in 1947. Intentions were directed this year not toward Kangchenjunga itself, but toward other peaks in the range. Ten Sherpas and 200 coolies had been engaged.

Norwegians Contemplating Nanga Parbat. The Associated Press reported in January 1949 that Professor Arne Naesse, of Oslo University, is planning to lead a Norwegian expedition to Nanga Parbat in 1950.

Air Survey of Nepal. Anderson Bakewell, S. J., now at De Nobili College, Poona, has drawn our attention to a Reuter dispatch of January 1949 concerning a projected "topographical map of 29,000 sq[uare] miles of catchment areas of the three main rivers of the Gurkha country." The Air Survey Company of India, Ltd., a sub-

sidiary of the British Fairey Aviation Company, has undertaken the work and plans to operate 14 aircraft from its base at Dum Dum. It is hoped that the necessary aerial photography will be completed in two seasons, totalling 14 months, and finished maps in two and a half years.

Himalayan Weather. Thanks to the same informant in Poona, we have had word of two interesting surveys reported by the *Statesman.*

In November 1948 an RIAF meteorological expedition under the leadership of Flying Officer K. Chandra, with a medical research team directed by Major S. L. Kalra, left Srinagar for Ladakh, to study weather conditions at altitudes of 18,000 to 20,000 ft. and medical problems connected with high-altitude flying. It is pointed out that, if a satisfactory all-weather route can be found, these remote Himalayan regions will be brought into closer contact with India.

To determine whether American methods of snow surveying are applicable under Himalayan conditions, the Central Board of Irrigation, Government of India, has decided to station whole-time observers who will study rain, snow, temperature, etc., in Himalayan catchment areas. Since a reconnaissance expedition found in June 1948 that mobility would be very difficult to achieve, local men will generally be selected for the work. Already begun in the Kosi catchment, observations were expected to extend to the Ganges in 1949.

Arctic and Antarctic

Greenland. Paul-Émile Victor, leader of the Expédition Polaire Française, has been for many months recently in western Greenland, E. of Disko Island. With 34 companions, he has been continuing the program of research initiated in 1948 in meteorology, geodesy and geophysics. The expedition, equipped with surplus "weasels" for transport over snow, planned to make deep borings in the Ice Cap. During the war, as a captain in the U. S. Army Air Forces, M. Victor was well known to many A. A. C. members for his work in the field of Arctic rescue and survival.

Antarctic Rescue. In the Antarctic winter night of July 1947,

"Pete" Peterson and I found ourselves 20 miles from base without adequate shelter or sufficient food. The circumstances leading up to this predicament would make a long story in themselves.

Leaving the mile-high plateau at 11.00 A.M., we made use of the few hours of twilight around noon to find our way down through the mountains to the piedmont glacier at sea level. Once there, we were threatened only with bad weather and the possibility of hidden crevasses. Speed was so essential that we had used rope and skis only where the crevasse danger was obvious. The rope caught on the three-foot, knife-edged sastrugi, and skiing on these ridges was intolerably slow and difficult. The rest of the time, we bet on our speed against the weather and the darkness.

At 6.00 P.M. we went astray in the deceptive twilight and found ourselves on the edge of a crevassed area. As we began to skirt it, we had the rope coiled and the skis dragging behind us. At 6.30 P.M. I knelt down on a patch of glacier ice to tie my bootstring. Pete, five feet away from me, stepped off the ice onto a patch of snow and suddenly disappeared, without a sound. I crawled up to the hole that he had made in the snow bridge across a four-foot-wide crevasse. I shone the light down and could see nothing but blackness. He shouted to me that he was unhurt, but jammed tight and face down. My 100 feet of rope would not reach him. I went through the precautions of marking the spot and taking bearings, and then put on my skis and headed for the base, nine miles away.

It was ten hours later when our rescue team, armed with searchlights, tents and medical gear, finally found him. We let down a doctor on the end of a rope, 106 feet down. He chipped and shoved until Pete came loose. We then pulled him up to the surface and whisked him onto a dog sled and back to the base.

Pete had been unconscious most of the time. Before he became unconscious, he had given up all hope of rescue. Surprisingly enough, his only injuries were scratches, minor bruises and shock. Heavy clothing and warm temperatures in the bottom of the crevasse had kept him from freezing. The crevasse itself, being narrow, and intermediate snow fills on the way down had afforded enough friction and cushioning effect to prevent injury when he hit bottom.

ROBERT H. T. DODSON

[This rescue, mentioned in William Latady's article in this issue* and so modestly recorded here, provides one of the most remarkable crevasse stories on record. Dodson's success in marking the crevasse, working his way to base, and returning with a rescue party that pulled Peterson out alive, is extraordinary; it reveals in him a fighting heart and mountaineering qualities of a high order.—*Ed.*]

* See pp. 244-5 above.

Of General Interest

Two Anniversaries. The year 1949 marks the centenary of the birth of Albert Heim (1849-1937) and the 65th anniversary of the death of Arnold Guyot (1807-84), two of the foremost glacial geologists of the past century.

Born at Zürich, Heim owed his early interest in geology to Escher von der Linth. At the age of 16 he made a model of the Tödi group. In 1873 he became professor of geology at the Polytechnic of Zürich, and two years later he succeeded Escher in the same position at the university. In 1882 he became director of the Geological Survey of Switzerland. He was elected an honorary member of the Alpine Club in 1897 and received the Wollaston Medal of the Geological Society of London in 1904, for his distinguished research in Alpine structure. His *Mechanismus der Gebirgsbildung* remains a classic.

Guyot was born at Neuchâtel. As early as 1838, at the suggestion of Agassiz, he undertook the study of glaciers. He was the first to announce the more rapid flow of the center than of the sides, and the more rapid flow of the top than of the bottom. He described the laminated structure of ice, and ascribed the movement to molecular displacement rather than to sliding of the mass as held by de Saussure. Induced by Agassiz to come to America in 1848, Guyot became professor of geology and physical geography at Princeton in 1854 and retained the post until his death. One of his best-known works, *Earth and Man: Lectures of Comparative Geography,* was translated into English in 1849. His extensive meteorological observations in this country led to the establishment of the U.S. Weather Bureau.

J. M. T.

Glaciology in the Sixteenth Century. The following passage is translated from Sebastian Münster's *Cosmographia Universalis* (Basel, 1543):

"*What is understood of Glaciers.* Glaciers, though not mine nor metal, yet resemble pure crystal in clarity, and are found usually to the south on the highest and wildest of peaks, which are called snow-mountains. Yet it is neither snow nor ice, but rather a hardened ice that never melts on the tops of the mountains. Lying there for two or three thousand years, it has become almost as hard as stone. And so, when a piece falls into a valley, it remains lying for a long time before turning into water, even in the great heat of summer or the glare of the sun. It is also so constituted that it purges and cleanses itself, so that in it no particles, sand or stone, large or small, remain. It tolerates none of these and becomes clear as crystal. It is almost unfathomably deep, frequently forms great crevasses and chasms, most difficult to cross, even by hunters, especially when covered with snow. In many places the gaping cracks are three or four hundred fathoms deep, almost bottomless. In summertime the beginning of a crack produces as fearful a sound as if the crust of the earth were broken. The hunters hang flesh and beast in them in summer so that it will freeze and preserve until a profitable time to sell. For the peasants the glacier also serves as medicine in severe illnesses, namely in dysentery, sunstroke and acute fevers, all of which are diseases of heat. They even say that glacier water is healthful under many circumstances. In summer it is extremely cold, turbid and gray as if saturated with ashes, and comes pouring out of the valleys in flooded brooks. In some places it falls from high cliffs; notably between St. Maurice and Martigny [the Pissevache waterfall], it pours from a lofty rock, fearsome to see. There is such frigidity in a glacier that one can make warm wine quite cold with but a bit of ice. In 1546, on the fourth day of August, I observed at the Furca that it was two or three spear-lengths thick, a crossbowshot wide, and I could see no end to its length; on which account it created an impression of awe. A piece the size of a house had just fallen, which made the prospect even more terrifying, and a stream with water and ice poured out of it so that I could not ride my horse across a bridge. And this water was the source of the Rhone. Not far from this glacier a large spring gushed forth on the mountain, which someone showed me as the

source of the Rhone. Everywhere from the mountains, waters run into this primary stream which soon forms the Rhone, falling over mountain and cliff with such roaring that one can scarcely hear the words of his companion. And this goes on and on until one comes to Brigue, one waterfall after another, and often the water falling from on high in foam and spray. Glaciers are known to exist on the other side of the Furca, and clinging to even higher mountains which adjoin the Furca. At the source of the Rhone, on the mountainside one can dig out masses of crystals, and many marmots run about, which are not left unharmed by men. It is quite cold on the Furca because of the perpetual snow and ice found there."

J. M. T.

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Information concerning possible articles and notes should be forwarded to the Editors at the earliest opportunity.